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EXECUTIVE COMMITTEE OF  
THE MULTILATERAL FUND FOR THE  
IMPLEMENTATION OF THE MONTREAL PROTOCOL  
Forty-fifth Meeting  
Montreal, 4-8 April 2005

**PROJECT PROPOSALS: CHINA**

This document consists of the comments and recommendations of the Fund Secretariat on the following project proposals:

Fumigant

- Tobacco sector plan for CFC-11 phase-out: 2005 workplan UNIDO

Phase-out

- Refrigeration servicing sector CFC phase-out plan: revised 2005 annual implementation programme and request to transfer US \$450,000 to UNEP as new co-operating agency UNIDO, UNEP, and Japan

Production

- Sector plan for CFC production phase-out: 2005 World Bank

Refrigeration

- Reapplication of project CPR/REF/23/INV/222, phasing out ODS at the refrigerator plant of Bole Electric Appliances Group UNIDO

Solvent

- ODS phase-out in China solvent sector: 2005 annual implementation programme UNDP

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**PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS  
CHINA**

**PROJECT TITLE****BILATERAL/IMPLEMENTING AGENCY**

Tobacco sector plan for CFC-11 phase-out: 2005 workplan	UNIDO
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**NATIONAL CO-ORDINATING AGENCY:**

State Environmental Protection Administration

**LATEST REPORTED CONSUMPTION DATA FOR ODS ADDRESSED IN PROJECT****A: ARTICLE-7 DATA (ODP TONNES, 2003, AS OF JANUARY 2005)**

Annex A Group I CFCs	22,808.85		
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**B: COUNTRY PROGRAMME SECTORAL DATA (ODP TONNES, 2003, AS OF JANUARY 2005)**

ODS	Foam	Ref.	Aerosol	ODS	Solvents	Process agent	Other
				CFC-11			500

**CFC consumption remaining eligible for funding (ODP tonnes)**

0

**CURRENT YEAR DRAFT BUSINESS PLAN:** Total funding US \$1,827,500: phase-out 168.5 ODP tonnes.

<b>PROJECT DATA</b>		2001	2002	2003	2004	<b>2005</b>	2006	2007	Total
<b>CFC-11</b> (ODP tonnes)	Annual consumption limit	1,000	880	700	500	<b>300</b>	150	0	
	Annual phase-out newly addressed	90	120	180	200	<b>200</b>	150	150	
<b>TOTAL ODS CONSUMPTION TO BE PHASED OUT</b>									
Total ODS consumption to be phased-in (HCFCs)									
<b>Total project funding (US \$):</b>		2,000,000	2,000,000	2,000,000	1,800,000	<b>1,700,000</b>	1,500,000	0	<b>11,000,000</b>
<b>Total support costs (US \$):</b>		180,000	180,000	150,000	135,000	<b>127,500</b>	112,500		<b>885,000</b>
<b>TOTAL COST TO MULTILATERAL FUND (US \$)</b>		2,180,000	2,180,000	2,150,000	1,935,000	<b>1,827,500</b>	1,612,500		11,885,000
Final project cost-effectiveness (US \$/kg)		9.00							

**SECRETARIAT'S RECOMMENDATION**

Approval of funding for the fifth tranche (2005) as indicated above

## PROJECT DESCRIPTION

### Tobacco sector plan for CFC-11 phase-out: 2005 workplan

#### Background

1. At the 32nd Meeting of the Executive Committee, an agreement between the Government of China and the Executive Committee for the implementation of the plan for the phase-out of CFC-11 in the tobacco sector (Tobacco Sector Plan) was approved. At the same meeting, the Executive Committee allocated US \$2 million to UNIDO for the implementation of the 2001 work programme.
2. At its 36th, 39th and 42nd Meetings, the Executive Committee approved US \$5.8 million for UNIDO as the subsequent funding tranches of the Tobacco Sector Plan.
3. The Government of China has submitted for consideration by the Executive Committee at its 45th Meeting, a progress report on the implementation of the 2004 work programme together with a request amounting to US \$1.7 million for the implementation of the annual work programme for the year 2005.

#### Progress report on the implementation of the 2004 work programme

4. At the beginning of 2004, the CFC-11 consumption quota was determined for each enterprise, in accordance with the total 2004 consumption quota for the tobacco sector and the actual production of the enterprise. As of the end of December 2004, in accordance with CFC-11 consumption reported by the enterprises, total CFC-11 consumption was 443 ODP tonnes.
5. The remaining 25 eligible tobacco expansion enterprises were invited to phase out their 2003 CFC-11 quota through a public bidding system. The bidding took place in March 2004. Ten enterprises that intended to dismantle their production equipment submitted their bids (UNIDO was fully informed of the bidding process and has reviewed all associated documents).
6. In March 2004, the State Tobacco Monopoly Administration (STMA) and the State Environmental Protection Administration (SEPA) reviewed the bids and selected the following nine companies for dismantling their CFC-11 expansion equipment (contracts were signed with these enterprises in May 2003):

Sector Plan No.	Company name	Expansion units	Date installed
47	Shenyang Cigarette Factory	1	Sep 1992
13	Meizhou Cigarette Factory	1	Oct 1993
10	Zhanjiang Cigarette Factory	1	Dec 1993
11	Zhanjiang Cigarette Factory Lianjiang Branch	1	Jun 1995
37	Zhangjiakou Cigarette Factory	1	Jun 1991
34	Xiamen Cigarette Factory	1	Apr 1992

Sector Plan No.	Company name	Expansion units	Date installed
43	Siping Cigarette Factory	1	Feb 1992
50	Liuzhou Cigarette Factory	1	Oct 1992
9	Ruzhou Cigarette Factory	1	Sep 1994
<b>Total</b>		9	

7. Three additional CFC-11-based equipment installed after 25 July 1995 (Xiamen, Tianshui, and Zunyi) were dismantled under the supervision of the Government of China without compensation from the Multilateral Fund.

8. The following technical assistance activities, which were proposed to be undertaken in 2003 but delayed due to the April 2003 SARS-related issues, were completed in 2004:

- (a) Study on technical specifications and quality control of expanded tobacco produced using non-CFC-11 alternative technologies;
- (b) Evaluation of the water high-temperature pneumatic-drying expansion technology; and
- (c) Evaluation of the feasibility of the CO<sub>2</sub> tobacco expansion unit set up in Xuzhou to supply expanded tobacco to several cigarette factories.

9. Two additional technical assistance programmes were initiated in 2004 and will be completed in 2005:

- (a) Study on the effect of different tobacco leaf material on the quality of non-CFC-11 expanded tobacco; and
- (b) Study on how the CO<sub>2</sub> expansion technique affects the volatile chemical components of tobacco. The study aims to address technical issues related to changes in the aroma of the tobacco due to the expansion of tobacco leaves using the CO<sub>2</sub> technology, ensuring the same cigarette quality as in the past, when tobacco was expanded with CFC-11-based equipment.

#### Annual work programme for 2005

10. The main activity to be implemented in the 2005 work programme is the issuance of new CFC-11 quotas by the Government of China to reduce CFC-11 by 200 ODP tonnes with a remaining consumption of 300 ODP tonnes at the end of 2005. The remaining 16 qualified enterprises will be invited to submit their quotas through a public bidding mechanism. Bids will be opened in April 2005.

11. In accordance with the Tobacco Sector Plan, the Government of China is requesting US \$1,700,000 for the implementation of the 2005 work programme.

## SECRETARIAT'S COMMENTS AND RECOMMENDATION

### COMMENTS

12. The Secretariat reviewed the progress report on the implementation of the 2004 work programme submitted by UNIDO, based on the agreement between the Government of China and the Executive Committee, and on the phase-out strategy for the tobacco sector. The Secretariat noted that, through the activities implemented in 2004, CFC-11 consumption for tobacco expansion was 443 ODP tonnes, i.e., 57 ODP tonnes below the CFC-11 consumption level established by the Tobacco Sector Plan.

13. For the 2005 work programme, the Secretariat notes that the CFC-11 phase-out target of 200 ODP tonnes is in accordance with the agreement.

14. The results of the study on the technical specifications and quality control of expanded tobacco produced using non-CFC-11 alternative technologies point to major technical problems related to the DIET and HADET tobacco expansion processes. For the DIET process, these problems are: poor process ability of the tobacco shred, severe loss of fragrance after expansion, and very low ratio of expanded/non-expanded tobacco in cigarettes. For the HADET process, tobacco shred cannot meet the design specifications, and there is instability in the production process. Based on these major problems, the Secretariat sought a clarification about the long-term sustainability of using these processes as replacements for the CFC-11 tobacco expansion process. In this regard, UNIDO indicated that the main objective of these studies is to avoid any production problems related to using the proper production parameters for the type and physical properties of each type of tobacco produced in China. Currently, there are more than 30 CO<sub>2</sub> tobacco expansion plants installed in China; this same technology is used by 80 per cent of the enterprises worldwide for the expansion of the tobacco leaves. Furthermore, there are no major concerns in China about the sustainability of this technology provided it is properly used. It is also UNIDO's opinion that the technical assistance so far provided further strengthens the sustainability of the technology.

15. The Secretariat noted that, of the total funding approved for the 2004 work programme (US \$1.8 million), US \$1.58 million was allocated to nine tobacco enterprises to dismantle their production lines, and used for training and technical assistance programmes. The Secretariat sought an explanation from UNIDO on what other activities would be implemented by the Government of China with the balance of US \$220,000. Subsequently, UNIDO indicated that within the flexibility given to China for the implementation of the Tobacco Sector Plan, the Government of China would review the bids that would be received in 2005 for dismantling the remaining enterprises before taking any decision on the allocation of the remaining funding available from the 2004 work programme.

**RECOMMENDATION**

16. The Fund Secretariat recommends blanket approval of the fifth instalment of the project with associated support costs at the funding level shown in the table below:

	<b>Project Title</b>	<b>Project Funding (US \$)</b>	<b>Support Cost (US \$)</b>	<b>Implementing Agency</b>
(a)	Tobacco sector plan for CFC-11 phase-out: 2005 work programme	1,700,000	127,500	UNIDO

Refrigeration servicing sector CFC phase-out plan: revised 2005 annual implementation programme and request to transfer US \$450,000 to UNEP as new co-operating agency

### **PROJECT DESCRIPTION**

17. The Executive Committee approved, at its 44<sup>th</sup> Meeting, the China Refrigeration Servicing Sector CFC Phase-out Plan at US \$1,000,000 plus support costs of US \$75,000 for UNIDO and US \$1,000,000 plus support costs of US \$130,000 for Japan for the implementation of the 2005 annual programme of the plan (Decision 44/49). Upon approval of the project, the State Environment Protection Agency reviewed the current situation prevailing in China in light of the Accelerated CFC Production and consumption Phase-out Plan also approved at the 44<sup>th</sup> Meeting of the Executive Committee. The Government of China is of the opinion that due to the experience of UNEP in implementing refrigeration-servicing sector training activities, the involvement of UNEP would be beneficial to the project. Thus, in its communication dated 7 February 2005, the Government of China requested the transfer to UNEP of US \$450,000 from the already approved first tranche for UNIDO, in order to enable UNEP to carry out various activities in areas where China finds a competitive advantage in obtaining UNEP's assistance.

18. The revised 2005 annual implementation plan is submitted for the consideration of the Executive Committee and is attached as an annex.

### **SECRETARIAT'S COMMENTS AND RECOMMENDATION**

#### **COMMENTS**

19. The Secretariat believes that UNEP's involvement in the training component can benefit the successful implementation of the project.

#### **RECOMMENDATION**

20. The Executive Committee may wish to:

- (a) take note of the revised 2005 Annual Implementation Programme;
- (b) assign UNEP as co-implementing agency of the subject project;
- (c) note the return of US \$450,000 plus support cost of US \$33,750 from the first tranche approved for the implementation of the China Refrigeration Servicing sector CFC Phase-out Plan (CPR/REF/44/INV/419); and
- (d) approve US \$450,000 plus US \$58,500 in support costs to UNEP for the implementation of selected activities under the 2005 Annual Implementation plan.

**CFC PRODUCTION PHASE-OUT PROGRAMME:  
2004 VERIFICATION REPORT**

**PROJECT DESCRIPTION**

21. According to the arrangement under the Agreement for the China CFC production sector plan, the World Bank submitted the 2005 annual programme for the CFC production sector phase-out in China to the 44<sup>th</sup> Meeting in November 2004. The Executive Committee decided “to approve the 2005 work programme of the China CFC production closure programme, noting that the request for funding and support cost would be submitted to the 45<sup>th</sup> Meeting by the World Bank, with a verification report on the implementation of the 2004 annual programme” (decision 44/28).
22. As requested, the World Bank is submitting to the 45<sup>th</sup> Meeting the verification report on the implementation of the 2004 China CFC production phase-out programme (attached without the data part), which contains the verification of 6 plants that were producing under the quota system in the 2004 annual programme (identified by the SRIC audit report numbers as A8, A10, B11, B8, B12, and B14).
23. The report contains a summary of conclusions and 3 annexes. The summary of the conclusions provides the overall assessment of the verification team on the performance of 2004 work programme in achieving the targets set in the Agreement and the aggregate data on the total CFC production; the breakdown between the different substances of CFC-11, CFC-12, CFC-113, CFC-114, CFC-115, CFC-13; the overall consumption of feedstock; and major issues identified during the verification. The overall assessment of the verification shows that China complied with the annual CFC production target set in the Agreement for the year 2004, with the total actual production of 25,284.80 ODP tonnes as against 25,300 ODP tonnes set in the Agreement.
24. Annex I is a description on a plant-by-plant basis of the verification process and the discussion of the findings. It starts with an assessment of the follow-up that had been implemented by the plant on the suggested improvements proposed by the last audit, continues with comments on the quality of record-keeping. It also discusses briefly the production process of the plant and the methodology and records used to verify CFC production and the consumption of feedstock. There is a discussion of the issues that the verification team identified during the visit. The conclusion of the verification of each plant is an assessment of the compliance of the company with the production quota.
25. Annex II presents the findings in the format approved by the Executive Committee and covers data on production capacity, product mix, production quota and actual CFC production by month, feedstock consumption ratio and inventory change of feedstock by month, and number of days in production. Comparative data on these parameters since the beginning of the phase-out programme is provided to facilitate a check on consistency.

26. There was no complete closure in 2004 and the 6 plants which had been producing in 2003 continued their production in 2004, but at a lower level under the control of mandatory quotas.

27. Annex III is the financial audit result presented by the financial specialist of the verification team. The focus of the audit is the verification of CFC production from the examination of financial records such as the procurement and consumption of raw materials. The report provides plant by plant the audited results of CTC and HF consumption, CFC production, and the countries being exported to.

## **SECRETARIAT'S COMMENTS AND RECOMMENDATION**

### **COMMENTS**

#### Overall assessment of the 2004 verification in light of the guidelines for verification of ODS production phase-out

28. The verification of the implementation of the 2004 work programme was carried out by the same team which applied the same guidelines and methodology used in the previous verification exercises, and provided a discussion of the issues identified during previous verifications and a year-to-year follow-up on those issues to ensure improvement. It is noted that the verification in 2004 had a closer examination of the exports and imports of CFCs in coordination with the import/export control office in SEPA. The results of the verification are presented in accordance with the approved formats, and are supported by adequate documentation which enables tracking and validation of CFC production, and the consumption of feedstock of HF and CTC.

#### Compliance with the Montreal Protocol control schedule for CFC-13

29. It has been confirmed by the verification team that China's production of CFC-13 in 2004 was 20.78 ODP tonnes, which is below the annual target of 21 ODP tonnes and is under the 21.3 ODP tonnes of maximum allowable production under the Montreal Protocol control schedule for CFC-13 production.

#### Compliance with the CFC-11 consumption ceiling

30. The CFC-11 production verified was 10,649.98 ODP tonnes, which is within the overall national CFC-11 consumption ceiling of 13,100 ODP tonnes for 2004, as set in the "Agreement for CFC Phase-Out in the Polyurethane Foam Sector in China".

#### Issues related to compliance with production quotas

31. It is noted from the verification report that the plants concerned had addressed the "in-process" stock of CFCs to avoid any unreported production, an issue raised by the auditors in the previous audit report. Instead of only including packaged CFCs in the production numbers, the

transfers from each shift product receiver tanks were counted as production to avoid product build-up between shifts. The verification also clarified the CFC-113 production for controlled uses and the production of CFC-113a as feedstock. There were two separate lines in the plant concerned, one producing CFC-113 for controlled uses which will be closed, and the other facility which is new and will be producing CFC-113a for feedstock uses. While it is understood that the production of CFC-113a for feedstock need not be verified, it is however obligatory for China to report such use to the Ozone Secretariat.

32. The Secretariat, in accordance with previous practice of furnishing information to the Executive Committee on verification of ODS production phase-out, is not including in the submission in Annex II the data part of the verification report. The data could, however, be made available to any member of the Committee upon request.

### **RECOMMENDATION**

33. The Secretariat recommends that in light of satisfactory verification that China achieved the CFC production reduction target as established in the CFC production sector agreement for the year 2004, the Executive Committee may wish to release to the World Bank US \$13 million for the implementation of the 2005 work programme of the China CFC production sector agreement, as well as US \$975,000 as support cost for the World Bank.

**PROJECT EVALUATION SHEET  
(NON-MULTI-YEAR PROJECTS)  
CHINA**

<b>PROJECT TITLE</b>	<b>BILATERAL/IMPLEMENTING AGENCY</b>
(a) Reapplication of project CPR/REF/23/INV/222, phasing out ODS at the refrigerator plant of Bole Electric Appliances Group	UNIDO
<b>NATIONAL CO-ORDINATING AGENCY</b>	SEPA

**LATEST REPORTED CONSUMPTION DATA FOR ODS ADDRESSED IN PROJECT**

**A: ARTICLE 7 DATA (ODP tonnes, 2003, as of October 2004)**

CFC	22,826		
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**B: COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes, 2003, as of October 2004)**

ODS	Foam	Ref.	Aerosol	Tobacco fluffing	Solvents	Process agent	Fumigant
CFC-11	11,423	1,672	280	620	1,660	17	
CFC-12	116	6,044	780				
CFC-13		20					
CFC-114			7				
CFC-115		188					
MeBr							1,087.8
<b>TOTAL</b>	<b>11,539</b>	<b>7,924</b>	<b>1,066</b>	<b>620</b>	<b>1,660</b>	<b>17</b>	<b>1,087.8</b>

<b>CFC consumption remaining eligible for funding (ODP tonnes)</b>	940.5
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<b>CURRENT YEAR BUSINESS PLAN ALLOCATIONS</b>		<b>Funding US \$</b>	<b>Phase-out ODP tonnes</b>
(a)		120,000	132

<b>PROJECT TITLE:</b>	<b>Project at Bole</b>
<b>ODS use at enterprise (ODP tonnes):</b>	132
<b>ODS to be phased out (ODP tonnes):</b>	132
<b>ODS to be phased in (ODP tonnes):</b>	
<b>Project duration (months):</b>	24
<b>Initial amount requested (US \$):</b>	113,250
<b>Final project cost:</b>	
Incremental Capital Cost (US \$)	113,250
Contingency (10%) (US \$)	
Incremental Operating Cost (US \$)	
Total Project Cost (US \$)	113,250
<b>Local ownership (%):</b>	100%
<b>Export component (%):</b>	0%
<b>Requested grant (US \$):</b>	113,250
<b>Cost-effectiveness (US \$/kg):</b>	11.13*
<b>Implementing agency support cost (US \$):</b>	10,193
<b>Total cost of project to Multilateral Fund (US \$):</b>	123,443
<b>Status of counterpart funding (Y/N):</b>	
<b>Project monitoring milestones included (Y/N):</b>	Y

<b>SECRETARIAT'S RECOMMENDATION</b>	Individual consideration
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\*including the ODS and cost of the earlier cancelled project

## PROJECT DESCRIPTION

34. In November 1997, at its 23rd Meeting, the Executive Committee approved the following project: Phasing out ODS at the refrigerator plant of Bole Electric Appliances Group (CPR/REF/23/INV/222), to be implemented by UNIDO. The objective of the project was to convert Bole's Factory 1 to cyclopentane foaming and isobutane refrigerant technologies, phasing out 132 ODP tonnes of CFCs. The approved project budget amounted to US\$ 1,469,029.

35. Early in 1998, UNIDO commenced the implementation of this project in close cooperation with the Government of China and the counterpart enterprise. UNIDO prepared the necessary work plans, technical specifications for equipment and services and discussed them with the counterpart; carried out international bidding and supplied the project equipment to the site in 1999. Since then, the equipment has remained stored in crates. In June 2000, the company started experiencing financial difficulties, and the production of Refrigerator Factory 1 was stopped. Due to the deterioration of the company's financial situation, the conversion project supported by the Multilateral Fund had been suspended. In agreement with the counterpart enterprise and the Government of China, UNIDO requested cancellation of the project.

36. In April 2003, at its 39th Meeting, the Executive Committee cancelled the Bole project by mutual agreement and requested UNIDO to investigate the possibility of redeploying the equipment from the cancelled project to the sector plan in the domestic and compressor refrigeration sector. The Executive Committee also advised UNIDO to adjust future work programmes in the light of the redeployment as part of its request for the second tranche of the sector plan (decision 39/14 (f) (ii)). Subsequently, UNIDO returned part of the unspent balance amounting to US \$112,400.

37. The Executive Committee, in its Decision 41/65, has also requested UNIDO to re-examine the possibility of redeploying the equipment supplied to Bole in the framework of the Domestic Refrigeration and Compressor Sector Plan. In this context, discussions were held in China between the State Environmental Protection Agency (SEPA) and UNIDO, as well as with the China Household Electrical Appliance Association (CHEAA), which is in charge of the technical side of the implementation of the Domestic Refrigeration Sector Plan. Both SEPA and CHEAA approached those eligible domestic refrigeration enterprises that have not yet benefited from the Multilateral Fund for the implementation of their conversion projects. Both authorities confirmed that none of the enterprises were ready to take over the equipment supplied to Bole for several technical and logistical reasons.

38. In April of 2004, the Nanjing Economic Reform Committee wrote to the State Environmental Protection Administration of China reporting on the reform and development process of state-owned enterprises, indicating that Bole has been included in the Economic Reform Actions Plan with the aim of transforming it into the local white household goods production base. The new management, following governmental policies, has made strenuous restructuring efforts; it has formulated and implemented the necessary enterprise reform plans approved by the government. At present, the enterprise is working on the realization of its

long-term development strategy, namely, to produce in the future 1 million refrigerators, 1 million air conditioners, and 1 million small electronic household appliances annually. The enterprise has identified strategic cooperation partners for further development of the strategy.

39. The enterprise will be moving to a new site (Xingang Industrial Park), where a new production facility fully based on non-ODS technologies, with a capacity of 1 million units of refrigerators will be established. The target will be 500,000 units for the domestic market and 500,000 units for the overseas market. It is planned that the construction of the new plant premises will be finalized by the end of 2005 and production presumably will start in 2006. The appropriate production equipment will be relocated from the old site, including the equipment supplied under the approved project, and will be installed in the new premises.

40. The company requested reinstatement of the earlier suspended and cancelled project. It made commitments to the Government and UNIDO that the equipment and facilities of the project will adopt the originally selected conversion strategy, i.e. cyclopentane and isobutane technologies (CFC-free technologies), which will also be used during future development of the refrigerator manufacturing line.

41. At the request of UNIDO, the Government of China double-checked all of the information provided by the company, as well as the financial situation of Bole. The Government confirmed to UNIDO that Bole is a viable company and officially requested UNIDO to reinstate the project. The project will be completed in 2006.

42. UNIDO submitted a request for the reinstatement of the project for consideration by the 45th Meeting of the Executive Committee, seeking approval to use the US \$130,261 which remained unspent from the project funds but has not yet been returned to the Multilateral Fund. No new equipment is included in the reapplication. The requested funds will be used for the installation and start-up of the equipment, and to supply other eligible technical services and items.

## **SECRETARIAT'S COMMENTS AND RECOMMENDATION**

### **COMMENTS**

43. In response to Decision 41/65, the Secretariat exchanged several communications with UNIDO examining the circumstances and possibility of re-utilizing the Bole production equipment at other refrigeration companies covered by the Domestic Refrigeration and Compressor Sector Plan. This work was ongoing when the Secretariat was advised of the radical improvement in the company's financial situation and received a proposal on reinstatement of the Bole project.

44. The reapplication for assistance for the cancelled project was made in accordance with decision 29/8 on the consequences of project cancellation. At its 29th Meeting, the Executive Committee decided:

- (a) That no reapplication for assistance from the Multilateral Fund should be allowed for projects that had been cancelled for the following reasons:
  - (i) Transfer of ownership to a non-Article 5 country;
  - (ii) Bankruptcy.
- (b) That reapplication for assistance from the Multilateral Fund at a level of funding no greater than that previously approved, following a new decision to be taken on a case-by-case basis, should be allowed for projects that had been cancelled for other reasons such as:
  - (i) Request of the company/financial situation;
  - (ii) Persistent project delays (after making sure that the causes of earlier delays had been removed);
  - (iii) Lack of response from the beneficiary.

45. In cases where reapplication was allowed pursuant to subparagraph (b) above, it could not take place within 24 months from cancellation.

46. Furthermore, second requests for project preparation, pursuant to subparagraph (b) above, could be considered as eligible incremental costs on a case-by-case basis, but should not exceed 30 per cent of initial project preparation funds (decision 29/8).

47. The Secretariat queried UNIDO on whether Bole was in bankruptcy, and paragraph (a) of decision 29/8 should apply. UNIDO clarified that cancellation of the project had been requested because of financial difficulties on the part of the company, which have since been overcome.

48. The Bole project was cancelled on 3 April 2003. The 24-month period required for reapplication will expire by the time the proposal is considered by the Executive Committee.

49. UNIDO is requesting funding of US \$113,250 plus agency support costs of US \$10,193 for supervisory activities by the agency and supplier services linked to equipment installation.

## **RECOMMENDATION**

50. The project is submitted for individual consideration. The Executive Committee may wish to consider approving the reapplication for the project in light of the information provided above.

**PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS  
CHINA**

<b>PROJECT TITLE</b>	<b>BILATERAL/IMPLEMENTING AGENCY</b>
ODS phase-out in China solvent sector: 2005 annual implementation programme	UNDP

<b>NATIONAL CO-ORDINATING AGENCY:</b>	State Environmental Protection Administration
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**LATEST REPORTED CONSUMPTION DATA FOR ODS ADDRESSED IN PROJECT**

**A: ARTICLE-7 DATA (ODP TONNES, 2003, AS OF JANUARY 2005)**

Annex A Group I CFCs	22,808.85	Annex B Group III	336.83
Annex B Group II	20,019.89		

**B: COUNTRY PROGRAMME SECTORAL DATA (ODP TONNES, 2003, AS OF 2004)**

ODS	Foam	Ref.	Aerosol	ODS	Solvents	Process agent	Fumigant
				CFCs	1,676.74		
				CTC	20,019.89		
				TCA	336.83		

<b>CFC consumption remaining eligible for funding (ODP tonnes)</b>	n/a
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**CURRENT YEAR DRAFT BUSINESS PLAN:** Total funding US \$11,540,125: phase-out 855.1 ODP tonnes.

PROJECT DATA		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
<b>CFC-113</b> (ODP tonnes)	Montreal Protocol limits	57,818					<b>28,909</b>		8,673			0	0
	Annual consumption limit	3,300	2,700	2,200	1,700	1,100	<b>550</b>	0	0	0	0		
<b>TCA</b> (ODP tonnes)	Montreal Protocol limits				721		<b>504</b>					216	
	Annual consumption limit	621	613	605	580	502	<b>424</b>	339	254	169	85		0
<b>CTC</b> (ODP tonnes)	Montreal Protocol limit						<b>5,733</b>					0	
	Annual consumption limit	110	110	110	55	0	<b>0</b>	0	0	0	0	0	0
<b>TOTAL ODS CONSUMPTION TO BE PHASED OUT</b>		608	508	580	733	628	<b>635</b>	85	85	84	85	0	
Total ODS consumption to be phased-in (HCFCs)		n/a											
Project cost as originally submitted (US \$)		n/a											
<b>Total project funding for UNDP</b> (US \$) (1,000s):		6,750	6,955	5,755	5,755	5,555	<b>5,680</b>	5,055	5,480	1,480	1,480	1,480	52,000
<b>Total support costs for UNDP</b> (US \$) (1,000s):		675	695	633	431.625	416.625	<b>426</b>	379	411	111	111	111	4,400.250
<b>TOTAL COST TO MULTILATERAL FUND</b> (US \$)		7,425	7,650	6,388	6,186.625	5,971.625	<b>6,106</b>	5,434	5,891	1,591	1,591	1,591	56,400.25
Final project cost effectiveness (US \$/kg)													12.9

**FUNDING REQUEST:** Approval of funding for the 6<sup>th</sup> tranche (2005) as indicated above.

<b>SECRETARIAT'S RECOMMENDATION</b>	Approval of funding as requested
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**SOLVENT SECTOR PLAN FOR ODS PHASE-OUT IN CHINA  
THE 2005 ANNUAL IMPLEMENTATION PROGRAMME**

**PROJECT DESCRIPTION**

Background

51. On behalf of the Government of China, UNDP has submitted to the 45<sup>th</sup> Meeting of the Executive Committee a request for funding of US \$5,680,000, plus support costs of US \$426,000 for UNDP, for the 2005 Annual Implementation Programme (AIP) of the Solvent Sector Plan for ODS Phase-out in China. The 2004 report of progress and the 2005 AIP were submitted to the 44<sup>th</sup> Meeting consistent with the solvent sector Agreement. The Executive Committee approved the 2005 AIP and noted that funding would be requested at the 45<sup>th</sup> Meeting (decision 44/31). Funding for the 2005 AIP has been included in UNDP's draft 2005 business plan.

52. UNDP has also submitted a proposal to amend the approved 2005 AIP. The amendment would authorise the use of US \$2 million in savings from previous tranches of the solvent sector plan to purchase and install equipment for the purification of n-propyl bromide (nPB), an alternative solvent currently being produced in China and now being used as a replacement solvent in phase-out activities funded through the sector plan.

53. The solvent sector plan for China was approved in principle at the 30<sup>th</sup> Meeting at a total cost of US \$52 million. Funds totalling US \$31,345,000 have been approved for the first five annual tranches from 2000 to 2004 inclusive.

Amendment to the 2005 Annual Implementation Programme

54. UNIDO has included a revised AIP in its submission (attached to this document). The proposed amendment is contained in the table in Section 6 of the revised AIP, reproduced below. The change to the table in Section 6 is the only difference between the AIP approved at the 44<sup>th</sup> Meeting and the revised AIP.

## 6. Annual Budget

Activity	Planned Expenditures (US \$)
Enterprise-level phase-out activities - Voucher System, Retroactive Reimbursement and Gradual Self Phase-out mechanism	4,280,000
Technical Assistance - National Training Center (\$500,000) - Public Awareness (\$100,000) - Support usage of alternative solvents (\$100,000) - Study on essential use (\$20,000) - Programme against illegal production, illegal import and illegal consumption of ODS (\$350,000) - Standards and Technical Specifications (\$100,000) - Study on alternatives for PCB (\$100,000) - Training and Audit on performance audit (\$30,000) - International and national technical experts (\$100,000)	1,400,000
<b>TOTAL</b>	<b>5,680,000</b>
Purification of nPB for use as main component for production of alternative solvent HEP-2 - Selection of contractor through national competitive bidding - Design, engineering - Procurement of purification equipment - Site Construction - Trial production - Production of annual capacity of 4,000 tons	<b>2,000,000</b> (from savings of previously approved tranches, achieved as a result of the ODS Reduction Contracts)

55. In its narrative UNDP has indicated that supplies of alternative solvents, such as the blended solvent "HEP-2" which contains nPB as its main component, are still only available in small quantities and at higher prices. UNDP maintains that it is important to support the development and local production of these alternative solvents so as to have sufficient a supply at lower prices to reduce the cost of phase-out actions and facilitate a smoother and more successful implementation of the solvent sector plan.

56. According to the phase-out schedule in the sector plan, CFC-113 will be completely phased out by the end of 2005, however, there are still large numbers of enterprises that use TCA as a cleaning solvent. UNDP has reported that HEP-2 has proven to be an excellent cleaning solvent for the electronic industry and that many of these enterprises have selected HEP-2 as the preferred alternative. There is an annual market of about 10,000 tonnes excluding demands from the aviation and automobile industries, and for precision cleaning.

57. To meet this demand, China has requested the Executive Committee's approval for re-allocation of US \$2 million in savings from previous annual programmes to fund the

purification of locally produced nPB as an ingredient for HEP-2. The purification equipment would be installed at the Multilateral Environment Convention Performance Industrial Zone of SEPA, in the Langfang area of Hebei Province, just outside Beijing. The capacity of the plant would be 4000 metric tonnes per year.

58. In addition to the US \$2 million in project funding, the winning contractor would contribute counterpart funding of US \$720,000 for auxiliary equipment and other construction costs.

59. nPB is an ozone depleting substance with a short atmospheric lifetime (around 11 days). nPB is not controlled under the Montreal Protocol however, in decision XIII/7 taken at the Meeting of the Parties in 2001, it was decided *inter alia* to request Parties to urge industry and users to consider limiting the use of nPB to applications where more economically feasible and environmentally friendly alternatives are not available, and to urge them also to take care to minimize exposure and emissions during use and disposal.

60. This is the second request for support for the production or purification of nPB. In its submission UNDP indicated that at its 33<sup>rd</sup> Meeting in March 2001 the Executive Committee considered a request to amend the 2001 AIP by re-allocating US \$2 million of the annual funding for the local production of nPB. The Executive Committee approved the reallocation in decision 33/46 on the following conditions:

- (a) N-propyl bromide produced by China would not be made available for export;
- (b) An annual production quota would be imposed on n-propyl bromide to meet the requirement for solvent use only;
- (c) China would control the sale of n-propyl bromide only to enterprises involved in the conversion projects under the China solvent sector plan;
- (d) The Import and Export Office of China would monitor and ensure that no n-propyl bromide was exported by China;
- (e) The implementing agency of the China solvent sector plan, UNDP, would include in its annual audit plan verification that no n-propyl bromide was exported;
- (f) No further financial assistance would be sought from the Multilateral Fund for the final conversion to zero ODP alternatives.

61. Because of China's difficulties in meeting the requirements of clause (a) not to export any nPB produced in China (not only the HEP-2 containing nPB produced with support from the Multilateral Fund), in July 2003 the Executive Committee requested China to return the funding of US \$2 million re-allocated pursuant to decision 33/46 for uses as originally approved in the solvent sector Plan (decision 41/46). Accordingly, the reallocation did not appear in the 2004 and 2005 AIPs.

## SECRETARIAT'S COMMENTS

62. The proposed activities to be funded from the US \$5,680,000 requested for the 2005 AIP (plus support costs for UNDP of US \$426,000), remain as indicated in the original AIP approved at the 44<sup>th</sup> Meeting. Accordingly the Secretariat is able to recommend approval of funding for the 2005 tranche of the solvent sector plan for China as requested.

63. In regard to the requested amendment to the approved 2005 AIP, the Secretariat notes that under the Agreement between the Government of China and the Executive Committee, the funds provided under the Agreement may be used "in any manner that China believes will achieve the smoothest possible ODS solvent consumption phase-out", consistent with UNDP's operational procedures. Notwithstanding this, when it authorised a similar amendment to the 2001 AIP, it decided to impose a number of conditions as indicated in paragraph 60 above. The principal effect of these conditions was to require that China not export any nPB. As also indicated above, China was not able to meet this condition and re-directed the funds to their original proposed uses in 2003.

64. UNDP has indicated that China will continue to request that any export ban should only apply to the purified nPB produced as a direct benefit of the Multilateral Fund funding of US \$2 million, (maximum capacity 4,000 metric tonnes per year) and not to nPB produced elsewhere in China (2003 capacity estimated by the TEAP at 20,000 metric tonnes per year).

65. Purification is an internal part of the production process and is required to a greater or lesser extent in most circumstances, dependant upon the market for which nPB is being produced. Thus this proposal does not differ in any fundamental way from the request submitted to the 32<sup>nd</sup> Meeting, to which the Executive Committee responded with decision 33/46.

66. The Executive Committee might consider whether, if it is inclined to endorse the proposed amendment to the 2005 AIP, the same conditions offered in decision 33/46 should apply.

## RECOMMENDATIONS

67. The Fund Secretariat recommends approval of US \$5,680,000 plus support costs of US \$426,000 for UNDP for the 2005 tranche of the solvent sector plan.

68. The Executive Committee might wish to consider in the light of decision XIII/7 of the Meeting of the Parties the request for an amendment to the 2005 annual implementation programme on the basis of the comments above.

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## 2005 Annual Implementation Programme

### 1. Data

Country	China
Year of plan	2005
# of years completed	0
# of years remaining under the plan	6
Target ODS consumption in refrigeration servicing sector of the preceding year (2004)	5,083 ODP tonnes
Target ODS consumption refrigeration servicing sector of the year of plan (2005)	4,572 ODP tonnes
Level of funding requested, without IA support cost	US\$ 2,000,000
Lead implementing agency	UNIDO
Cooperating implementing agencies	JAPAN, UNEP

### 2. Targets

The maximum CFC consumption in the refrigeration service sector: 4,572 ODP tonnes.

### 3. Main Technical Assistance Activities

The project in the first tranche aims at establishing the national operational mechanism for management and monitoring of the phase-out plan. It will also initiate some of substantial project activities.

Since the duration required for completion of project components is expected to be 10 - 30 months, the phase-out activities in 2005 will contribute to the reduction of the CFC consumption in the period 2005 - 2006.

#### A. Project management

1. Set-up of coordination group
2. Develop an MIS
3. Monitoring
4. Policy development and research studies
5. Training, workshops and awareness promotion
6. Survey of vehicles disposal stations

## **B. Training of technicians**

1. Designing training materials in the first half year of 2005□
2. Set-up of a National Training Center
  - Provide recovery and recycling equipments and refrigerant identifiers for training.
  - 2 workshops for the training of trainers (14-15); 24 workshops for technicians from vehicle disposal stations, performed in the latter half year, total 360-480 participants.
3. Set-up of four regional training centers
  - The selected centers will be located in four typical cities of China, two sets of equipments will be provided for each center;
  - Carry out 40-50 workshops for total 600-1,000.

## **C. Refrigerant recovery and recycling**

- Select 30 from 365 vehicle disposal stations as recovery centers. Each center will be equipped with two sets of recovery units, two refrigerant identifiers and 1-3 refrigerant storage tanks with the capacity of 1-2 tons.
- Each of the remaining 335 stations will be provided with one set of equipment including a recovery unit, a refrigerant identifier and a refrigerant tank with 100-200kg capacity.
- Demonstration activities will be firstly carried out in 3-4 typical regions of China in 2005. Each region will have a recovery center, collecting CFC refrigerant delivered from disposal stations under its network. The successful experience obtained from the demonstrations will be introduced to other disposal stations step by step.
- Start the procurement process for 200-240 sets of equipments in 2005 considering the full use of the first tranche funding. These equipments are to be delivered by the suppliers in batches, based on the project progress.

## **D. Incentive and management cost provided for vehicle disposal stations**

- Provide financial incentive for the operation of disposal stations, 300\$/station/year, total cost about 100,000 \$/year.
- 100,000\$ for management, awareness generation and workshops per year.

## **E. R&R demonstration activities in MAC service stations**

- Select 30-50 MAC service stations to carry out R&R demonstration activities. Their experience will be introduced to other service stations in the coming years after achieving the significant result.
- Train the technicians in the above stations.
- Provide one set of equipment for each station above, including vacuum pump, manifold & gauges, hoses, refrigerant charging cylinder, R&R machine.

#### 4. Government Action

Policy/Activity Planned	Schedule of Implementation
Designing relevant policy framework, regulations for meeting the project's objectives	During 2005
Supervision and monitoring of the activities	During 2005

#### 5. Annual Budget

Activity	Planned Expenditures (US \$)
<u>Project management</u> MIS and monitoring, coordination, consultant, office set-up, capacity building of the management structure for local national institutions, policy development, awareness generation, code of service practices and investigation on vehicle disposal enterprises	525,000
<u>Training of technicians</u> Equipment for at least 4 training centers, equipment for 1 national training center, training materials design, training of trainers, training of technicians	369,000
<u>Refrigerant recovery and recycling</u> Equipments for recovery centers of retired vehicles and vehicle disposal stations, R&R equipments for MAC service stations	800,000
Incentive for operating of vehicle disposal stations	100,000
International consultants, verification and audit	50,000
Contingency	156,000
<b>TOTAL</b>	<b>2,000,000</b>
Japan	1,000,000
UNIDO	550,000
UNEP	450,000

#### 6. Administrative Fees (Agency Support Cost)

Japan	130,000
UNIDO	41,250
UNEP	58,500
<b>TOTAL</b>	<b>229,750</b>



**CHINA CFC PRODUCTION PHASE-OUT PROGRAM**  
**2004 VERIFICATION REPORT**  
**FEBRUARY 14, 2005**

**Inspection Team**

F.A Vogelsberg: Mission Leader and primary text preparation – Annex I  
Hua Zhangxi: Data Summary – Annex II (Gradual Closure)  
Wu Ning: Financial Verification of CFC Production for China in 2004 – Annex III

**Assisted and Accompanied by**

Pang Chunan

**Inspection Mission Time Frame**

January 24 – February 7, 2005

**Enterprises in Visitation Order**

Zhejiang Juhua Fluoro-chemical Co. Ltd. – Zhejiang Province, Quzhou City  
Zhejiang Dongyang Chemical Plant – Zhejiang Province, Dongyang City  
Zhejiang Linhai Limin Chemical Plant – Zhejiang Province, Linhai City  
Zhejiang Chemical Research Institute (ZCRI) – Zhejiang Province, Hangzhou City  
Jiangsu Changsu \*3F Refrigerant Co., Ltd. – Jiangsu Province, Changshu City  
Jiangsu Meilan Chemical Co. Ltd – Jiangsu Province, Taizhou City

\* World Bank documents spell as Changsu; true spelling is Changshu

## **Report Format and Contents**

- **Verification Conclusions for CFC Production in China for 2004**
- **Annex I – Text covering details of Technical effort by Vogelsberg and Hua for the six CFC Enterprises visited and inspected**
- **Annex II – CFC Production verification tables for gradual closure for the six enterprises**
- **Annex III – Financial Verification of CFC Production for China in 2004**

## **Verification Conclusions with respect to China's CFC Production in 2004**

There was no complete closure project in China CFC Production Sector in 2004, therefore, there were six enterprises producing CFC products in China 2004, the same as in 2003. The verified overall national production of CFCs in 2004 is 25,285 tonnes (ODP). The following table is the breakdown in accordance with various product types: The summary of product stocks in the six CFC producers in 2004 are also in this table.

Type of CFC Product	Number of Producers	Total Production		Total Producer's Stock in 2004 (MT)		
		ODS (MT)	ODP(tonnes)	Opening	Closing	Change
CFC-11	3	10,649.98	10,649.98	1,746	698	- 1,048
CFC-12	4	13,323.92	13,323.92	2,123	2,459	+ 336
CFC-13	1	20.78	20.78	Nil	Nil	Nil
CFC-113	1	1,374.19	1099.35	663	837	+ 174
CFC-114	1	0	0	31.4	22.9	- 8.5
CFC-115	2	317.96	190.77	101	68.8	- 32.2
Total National Production			25,284.80			

The targeted limit of total CFC production in 2004 is 25,300 ODP tonnes as specified in the Agreement. Therefore the verified total actual CFC production is 15 ODP tonnes lower than the targeted limit.

The CTC Consumption for overall national CFC Production in 2004 is summarized in the following table:

CTC used for	Amount CTC (MT)
Direct consumption for CFC-11 production	12,829.30
Direct consumption for CFC-12 production	18,153.66
Direct consumption, subtotal for CFC-11 & 12	30,982.96
Indirect consumption for CFC-13 production	78.76
Overall national CTC consumption for CFC Production in 2004 (including CFC 11,12 & 13)	31,061.72

The total consumption of CTC for the production of 10,649.98 MT of CFC-11 is 12,829.30 MT; and the overall average CTC/ CFC-11 ratio is 1.205 (theoretical 1.12). Among the three CFC-11 producers, the producer that had the lowest CTC/ CFC-11 ratio (1.189) is Jiangsu Changshu 3F Refrigerant Co. Ltd. (SRI# A 10); and the highest ratio (1.259) is Jiangsu Meilan Chemical Co. Ltd (SRI# A 8).

The total consumption of HF for the production of 10,649.98 MT of CFC-11 is 1,676.58 MT; and the overall average HF/ CFC-11 ratio is 0.157 (theoretical 0.145). Among the three CFC-11 producers, the producer that had the lowest HF/ CFC-11 ratio (0.154) is Jiangsu Changshu 3F Refrigerant Co. Ltd. (SRI# A 10); and the highest ratio (0.178) is Jiangsu Meilan Chemical Co. Ltd. (SRI# A 8).

The total consumption of CTC for the production of 13,323.92 MT of CFC-12 is 18,153.66 MT; and the overall average CTC/ CFC-12 ratio is 1.362 (theoretical 1.272). Among the four CFC-12 producers, the producer that had the lowest CTC/ CFC-12 ratio (1.315) is Jiangsu Changshu 3F Refrigerant Co. Ltd. (SRI# A 10); and the highest (1.403) is Zhejiang Dongyang Chemical Plant (SRI# B 12).

The total consumption of HF for the production of 13,323.92 MT of CFC-12 is 5,204.83 MT; and the overall average HF/ CFC-12 ratio is 0.391. Among the four CFC-12 producers, the producer with the lowest HF/ CFC-12 ratio (0.366) is Zhejiang Juhua Fluoro-chemical Co. Ltd. (SRI # B 14) and the highest (0.438) is Zhejiang Dongyang Chemical Plant (SRI# B12).

A detailed summary of China's CFC production in 2004 is on the next page.

All the verified monthly production data and raw material consumption data are recorded in the Annex II of this Report while the verification process as well as the assessment and findings are described in Annex I of this Report.

During the time the CFC 2004 Verification Team was in Jiangsu Changshu 3F Fluoro-chemical Co Ltd. (A10), the Team visited the old CFC-113 production unit as well as the newly built CFC-113a/ CTFE (chloro-tri-fluoro-ethylene) production unit again and confirmed that they are separate production units. Details are described in Annex I of the Report.

## ANNEX I

### SUMMARY OF CHINA CFC PRODUCTION IN 2004

#### CFC-11

SRI #	Name of Enterprise	Production (ODS)	Production (ODP)	CTC Consumption	HF Consumption	Ratio CTC/CFC-11	Ratio HF/CFC-11
A 8	Jiangsu Meilan Chemical Co. Ltd	642.56	642.56	808.76	114.16	1.259	0.178
A 10	Jiangsu Changsu 3F Refrigerant Co. Ltd.	6,682.35	6,682.35	7,947.71	1,026.46	1.189	0.154
B 14	Zhejiang Juhua Fluoro-chemical Co. Ltd.	3,325.08	3,325.08	4,072.83	535.96	1.225	0.161
	Overall	10,649.98	10,649.98	12,829.30	1,676.58	1.205	0.157

#### CFC-12

SRI #	Name of Enterprise	Production (ODS)	Production (ODP)	CTC Consumption	HF Consumption	Ratio CTC/CFC-12	Ratio HF/CFC-12
A 8	Jiangsu Meilan Chemical Co. Ltd.	1,238.72	1,238.72	1,685.99	505.92	1.361	0.408
A 10	Jiangsu Changsu 3F Refrigerant Co. Ltd.	4,639.38	4,639.38	6,098.78	1,883.79	1.315	0.406
B 12	Zhejiang Dongyang Chemical Plant	1,213.07	1,213.07	1,701.70	531.80	1.403	0.438
B 14	Zhejiang Juhua Fluoro-chemical Co. Ltd.	6,232.75	6,232.75	8,667.19	2,283.32	1.391	0.366
	Overall	13,323.92	13,323.92	18,153.66	5,204.83	1.362	0.391

#### CFC-13

SRI #	Name of Enterprise	Production (ODS)	Production (ODP)	CFC-12 Consumption	Ratio CFC-12/CFC-13	Indirect CTC Consumption*	Indirect CTC/CFC-13 ratio*
B 8	Zhejiang Linhai Limin Chemical Plant	20.78	20.78	56.58	2.722	78.76	3.790

#### CFC-113

SRI #	Name of Enterprise	Production (ODS)	Production (ODP)	PCE Consumption	HF Consumption	Ratio PCE/CFC-113	Ratio HF/CFC-113
A 10	Jiangsu Changsu 3F Refrigerant Co. Ltd.	1,374.19	1,099.35	1,391.23	625.92	1.012	0.455

#### CFC-114

SRI #	Name of Enterprise	Production (ODS)	Production (ODP)	CFC-113 Consumption	HF Consumption	Ratio CFC-113/CFC-114	Ratio HF/CFC-114
B-11	Zhejiang Chemical Research Institute	-	-	-	-		

#### CFC-115

SRI #	Name of Enterprise	Production (ODS)	Production (ODP)	CFC-113** Consumption	HF Consumption	Ratio** CFC-113/CFC-115	Ratio HF/CFC-115
A 10	Jiangsu Changsu 3F Refrigerant Co. Ltd.	179.70	107.82	314.40	127.11	1.766	0.707
B-11	Zhejiang Chemical Research Institute	138.26	82.95	177.00	43.23	1.280	0.313
	Overall	317.96	190.77	491.40	170.34	1.545	0.536

\* The indirect CTC consumption is calculated by the consumption of CFC-12 times the Ratio CTC/CFC-12 (of B14) and the CTC/CFC-13 Ratio is calculated by Ratio CFC-12/CFC-13 (of B8) times the Ratio CTC/CFC-12 (of B14)

\*\* Since 2004 Zhejiang Chemical Research Institute uses CFC 113a as the raw material instead of CFC 113.

## ANNEX I

**Tuesday, January 25, 2005 – Zhejiang Juhua Fluoro-chemistry Co. Ltd.**

**12,000 TPA CFC-11 & CFC-12 – Single Plant**  
**15,000 TPA AHF**  
**115,000 TPA Chloromethanes – nominal 20,000 TPA CTC**  
**(Expanded from 70,000 TPA by 45,000 TPA in 2004)**

### **General**

The team's last visit to Juhua was February 3, 2004. Expansion of their chloromethanes unit is the only significant change.

This is the first time we looked at exports in detail and there are significant gaps in their records that will be corrected in 2005. They provided an export record for all export shipments showing: destination country, product type, actual MT of shipment and export license number. Several records for the serial number and export license number were missing. A separate report on exports for all of China's CFC Enterprises will be issued when the team has a complete picture.

There were seven (7) shipments to Russia (130.5 MT in 3 shipments of CFC-11 and 153.73 MT in 4 – ISO containers of CFC-12) for MDI's under the essential use exemption. There were 3 shipments of CFC-12 in DAC's totaling 46.92 MT and one (1) MT of CFC-11 in drums shipped to Singapore, a tax-free Article 2 nation for shipment to other countries. All other reported shipments were to Article 5 Countries. The Import/Export office has complete records of all transactions so it will be possible to answer and questions raised by Juhua's current incomplete records.

### **Verification of Year 2004 CFC-11/12 Data**

Readers of past reports by our team should recall that through 2002 Juhua only counted packaged product as production, which created large quantities of in-process inventories. Therefore, prior to the 2003 years' verification only packaged cylinders, drums, tank trucks and iso tanks were counted as official production. Starting in 2003 official production was determined by the measurement of product transformed each shift from the shift product receivers. We examine the shift tank inventories at the end of and beginning of each new year to ensure that in-process volume is insignificant. In 2004 the CFC-12 in-process volume is 100 kg higher and CFC-11 was unchanged; insignificant since Juhua produced 6 MT less CFC11/12 in 2004 than their quota allowed.

Also starting in 2003 Juhua, at our request, created an Excel spreadsheet to tabulate all transfer slips documenting production to warehouse movement of finished product. The spreadsheet generates monthly figures for CFC-11 and CFC-12. We can easily verify all the transfers against the spreadsheet figures without having to enter hard to read figures into a calculator. Similar spreadsheets are used for CTC transferred from the chloromethanes unit and AHF from their AHF unit.

As mentioned above, CFC-11 and CFC-12 is collected in shift product receivers and transfers are made from these tanks by checking the starting and ending levels via sight glass and correcting the volume for temperature and density, providing a very accurate measurement.

CTC is transferred to the CFC plant via a level tank, again corrected for temperature and density.

HF is transferred via pipeline through a mass flow meter to the CTC plant from the AHF unit. The plant produced 17,146.5 MT and purchased 4659.5 MT to meet total site needs of 21,806 MT. HF to the CFC plant was only 2840.2 MT of the total plant use.

There was confusion during the 2003 audit in properly accounting for Juhua's CTC figures, as historically Juhua lumped CTC for commodity sales with CTC for CFC's. In 2004 the CTC balance represents transfers to the CFC plant only. At year end 2003 the combined CTC stock was 249.2 MT of which 170.92 MT was for CTC commodity sales, leaving 78.28 MT as CFC plant inventory for starting 2005.

All monthly CFC-11/12 production and CTC and HF transfer were verified as correct as reported.

Juhua continues to have high plant operating hours and plant in time for 2004 was 331 days; comparable to 345 days in 2003 and 319 days in 2002.

The Team is satisfied that Juhua's 2004 CFRC-11/12 production and CTC and HF raw material consumptions have been correctly reported to SEPA.

#### **Thursday, January 27 – Zhejiang Dongyang Chemical Plant**

5,000 TPA CFC-12  
20,000 TPA HCFC-22 (expanded from 8,000)  
25,000 TPA AHF (expanded from 20,000)

#### **General**

This is the team's sixth visit to Dongyang Chemical. Addition of a 2<sup>nd</sup> HCFC-22 line and capacity ream out of the AHF plant occurred in 2004.

#### **Verification of Year 2004 Data**

This continues to be one of the easiest plants for data verification because of the plant's single product line and multiple records that can be cross checked.

We examined all CFC-12 filling log sheets for filling of DAC's and cylinders for each day and month and all matched reported production.

We then checked CFC-12 production transfer slips against the above log sheets and found 100% accuracy.

They also create a daily total site balance sheet from the above mentioned records showing: starting CFC-12 inventory, production, transfers to warehouse, CFC-12 sales, and end of day inventory. This record is signed by the site supervisor, warehouse foreman and production supervisor. Using these daily balance sheets they also prepare a monthly balance sheet.

CTC starting inventory, transfers into the CFC-12 plant, daily CTC use and ending CTC inventory for each day are kept in a bound notebook. The daily consumption figures are also

kept as a monthly cumulative figure. We examined all entries for each month and found total agreement with the figures reported to SEPA.

In the past AHF transfers were always in 1320 kg increments from a level tank in the HF Plant making the monthly addition very simple. But after April 2004, they realized there were inaccuracies in this level tank procedure that overcharged the CFC-12 plant, hence, they switched to an electronic weigh tank. From April forward AHF transfer vary in quantity requiring adding all figures individually. All daily and monthly transfers of AHF were verified as reported to SEPA.

Dongyang's operating day figures have always proven to be very accurate as they keep a daily record showing exactly how many hours raw material feeds were going to the reactors, hence, their monthly operating days will typically show fractional days. As noted in the past Dongyang and the region are faced with an electrical power shortage and the CFC plant's refrigeration is a significant load, hence they prefer to operate at low rates for longer periods as opposed to starting and stopping and setting higher peak power loads. Their operating days in 2004 totaled 223 vs. 319 in 2003 and 239 in 2002. This 5,000 TPA plant produced 1213 MT vs. their 2004 quota of 1217 MT or one-quarter of their capacity.

As requested, Dongyang provided a sheet showing their 2004 CFC-12 exports. They had 26 licenses for exports of 448.4 MT but only shipped 60% of this quantity, or 292.6 MT. Data provided included: destination country, license number, approval quantity, actual shipped quantity, B.O.L number and ship date. The 292.6 MT export in 2004 was a significant drop from their 801 MT in 2003 and 455 MT in 2002.

The Team is satisfied that Dongyang's 2004 CFC-12 production and CTC plus HF consumption is correct as reported to SEPA.

### **Friday January 28 – Zhejiang Linhai Limin Chemical**

100 TPA CFC-13  
26,000 TPA HCFC-22 (two 8,000 MT units at this site. Capacity was stated incorrectly as 15,000 MT last year)

### **General**

Our last and fifth verification here was February 5, 2004. As mentioned in last year's report they expanded HCFC-22 capacity by building a 10,000 MT unit at another site; bringing their total company capacity to 26,000 MT.

### **Verification of CFC-13 Data**

Linhai Limin were required to reduce CFC-13 production for 2004 from 21.3 MT quota for 2003 to 21 MT. Actual 2004 production was 20.78 MT.

As mentioned in last year's report Juhua became Limin's feed stock CFC-12 supplier for 2003, following shutdown of Limin's CFC-12 plant at year end 2002. Also, mentioned last year, Limin continues to supply their traditional customers with CFC-12 by purchasing CFC-12 in the open market.

As mentioned last year Juhua and Limin coordinate feed stock CFC-12 transfers to ensure that any unused feed stock is accounted for either by Juhua adding it to their year's

official quota controlled production or Limin transferring back from the CFC-13 production unit to the warehouse for sale as commodity CFC-12. At the end of their 2004 CFC-13 production Limin had 295 kg of unused CFC-12, which was transferred back to commodity CFC-12 inventory (non-feedstock use under quota control).

Limin started their 2004 CFC-13 production early in January and except for stopping for the Spring Festival operated continuously until late September when goal production was achieved.

As seen in last year's data, Limin again had one small export of CFC-13 to Israel (245 kg). In questioning this sale to an Article 2 country we understand this 245 kg is actually recycled or recovered CFC-13 evacuated by Limin's recovery system from returned CFC-13 cylinders that typically contain a small "heel". The 245 kg represents only 1.15% of their 2003 production and is clearly a credible value based on industry experience. Since the CFC-13 (245 kg) was counted in prior year's production and sold into the consumption market it is within M.P. rules to sell recycled or recovered ODS to any party. Limin showed us documentation from Israel's Ministry of Industry, Trade and Labor (Chemical Administration), authorizing this sale along with local EPB authorization.

We examined all transfer slips for production to warehouse transactions and found all months and the year correct as reported to SEPA. Verification is simplified by the fact that all cylinders are filled to exact net weights of 35 and 8 kg.

July was the poorest CFC-12/CFC-13 ratio month at 3.011 vs. normal 2.7. Catalyst life is typically 6 months and they start each year with new catalyst and change in mid-year, which they did in July. However, the catalyst activation took longer than normal leading to poor yield and low July production.

The Team is satisfied that Linhai data for 2004 is accurate.

### **Saturday, January 29 – Zhejiang Chemical Industry Research Institute (ZCRI)**

150 TPA CFC-114/115

#### **General**

ZCRI still have a large unsold CFC-114 inventory, so again in 2004 they added their CFC-114 to their CFC-115 quota to arrive at a quota of 130.3 MT for CFC-115, with approval of SEPA.

Due to an oversight in the Agreement for the solvent sector plan China's CFC-113 producers can no longer sell CFC-113 for feed stock use by other Enterprises. Therefore ZCRI has reached agreement with Changshu 3-F to be their supplier of CFC-113a from their new feedstock CFC-113a facility.

#### **Verification of Year 2004 CFC-114/115 Data**

There was no production of CFC-114 in 2004. The small quantity of CFC-114 sales sold as blend with CFC-12 is for MDI applications in China. One MT of CFC-114 was exported to the UAE, same quantity to this account as last year.

When ZCRI used co-product CFC-113a they noticed improved yields, vs. the CFC-113 isomer, for both the organic and HF raw materials. In 2004 all CFC-115 production was from

CFC-113a using an improved catalyst system recently developed for other fluorocarbon products. The 2004 vs. 2003 raw material yields (ratios) are significantly improved, 1.280 vs 1.35 for CFC 113a/CFC115 and 0.313 vs. 0.368 for HF/CFC-115.

As in 2003, they operated seven months in 2004 producing their quota in 203 days vs. 221 days in the previous year.

We are satisfied that all data for CFC 115 production is correct as reported to SEPA.

**January 30, Sunday – Jiangsu Changsu 3F Refrigerant Co. Ltd.**

10,000 TPA CFC-11	
5,000 TPA CFC-12	7,000 TPA AHF (3 small units)
4,000 TPA CFC-113	
400 TPA CFC-115	

**General**

The CFC-113 solvent sector plan calls for CFC-113 production for solvent sales to cease by June 30, 2005, hence 3F will dismantle their old CFC-113 plant and utilize their new CFC-113/CFC-113a feed stock unit to supply their internal feed stock uses as well as sell CFC-113a to ZCRI as feed stock for CFC-114/CFC-115.

**Verification of Year 2004 CFC Production Data**

**CFC-11**

The CFC-11 plant operated ten months (275 days) and was down by mid-November having produced 6682.35 MT vs. their 6683 MT quota.

Verified monthly and yearly production to be correct as reported to SEPA by examining all drum filling records and transfer slips documenting movement from production to the warehouse. The transfer slips are in bound pads where the copy and original remain in the pad. No pages were missing from these bound pads; support the accuracy of their records.

CTC for CFC-11 is via pipeline from the warehouse bulk storage into one of two level tanks which in turn feed the four (4) CFC-11 reactor feed tanks. All pipeline transfers are recorded in a bound notebook and transfer slips created for each transfer into the production unit. All CTC transactions were verified to have been accurately reported.

HF for CFC-11 is transferred via pipeline into the weigh tanks where typical transfers are increments of 1 MT. All monthly transfers were checked and found to be accurate. Examined November CFC-11 reactor logs and all were properly filled out and supported reported operating days.

**CFC-12**

The CFC-12 plant operated 314 days over eleven months, producing 4,639.38 MT vs. their 4640 MT quota. Finished the year's campaign by mid November.

The CTC, AHF and CFC-12 transfer slips are identical to the CFC-11 plant and were verified against the bound notebook record. We also checked cylinder filling records recorded in

a bound note pad. These slips show serial number, tare weight and net weight. There is usually one - two such slips per day depending upon the number of packaged units. When filling DAC's they record weight by lots in increments of 5; i.e. 40, 45, 50 etc. Totals from these filling records are entered into the daily transfer slips.

HF for CFC-12 is via pipeline into two parallel weight tanks and are typically in 1 – 1.1 MT increments. All HF transfer slips were added for each month and agreed with reported totals.

CTC consumed for CFC-12 production were verified by adding all transfer slips for each month. There was a 0.1 MT under reported value in the September Financial record that was corrected by the Financial Department in November. The production CTC transfer slips were correctly reported.

Examined April reactor log sheets for CFC-12 and confirmed at least one reactor (out of two) operated each of the 31 day accounting period. The 2<sup>nd</sup> reactor was down for just ½ shift. Examined reactor log sheets for October, a low production month, and confirmed that only one reactor operated all month with the second reactor down one-half of the month. In both cases the reported operating days were correctly reported.

### **CFC-113**

Only operated four (4) months producing 1374.19 MT against their 1375MT quota, a total run of 101 days that was completed by April 5. We noted in last year's report that they had 225 kg in-process CFC-113 that should have been counted as 2003 production but agreed to deduct from their 2004 quota. As of April 5, at the termination of 2004 production both product receivers were empty and official production was below quota.

Verified all CFC-113 drum filling records for the (4) operating months. All drums are 53 gal (200 liter), typically filled to 250 kg but upon special customer request sometimes filled to 240 and 235 kg.

Per agreement between the World Bank and the M.P. Secretariat feed stock CFC-113 from their new feed stock plant as well as CFC-113a product will not be verified by the Bank as feed stock uses are not under quota control since these are non emissive uses. From our plant inspections, we can assure that the old and new CFC-113 plants are entirely separate structures, on opposite sides of an intraplant roadway.

### **CFC-115 Verification**

CFC-115 cylinders in 2004 were primarily 500 kg, filled to exact weights, making accounting very easy. They operated their CFC-115 plant ten months or 247 days with a mid-year shutdown from mid April to mid June, ending the year's campaign by mid November. They produced 179.70 MT of CFC-115 vs. quota of 180 MT. (actual tons – not ODS tons).

Beginning in 2004 CFC-113 produced from their original CFC-113 unit was for solvent sales and process agent use only. Feed stock for CFC-115 and other site CFC based products was supplied from their new CFC-113/CFC-113a/CTFE unit.

Monthly cylinder filling records for CFC-115 were examined for each month and while official reported figures were correct as reported one filling record slip contained an error, i.e. the slip indicated the filling of 17 cylinders at 500 kg each when in reality they filled 16 cylinders at 500 kg each plus one 200 kg cylinder. However, the correct 8.2 MT weight for the transfer was entered in the total weight box.

CFC-113 is transferred from the new CFC-113/CFC-113a unit to CFC-115 plant via a 5 m<sup>3</sup> portable tank transported by fork lift. Transfer quantities are typically 3.5 MT and all monthly transfer and consumption figures were verified as accurately reported.

AHF is supplied in cylinders, typically exact 400 kg quantities. All transfer and consumption figures were verified as accurately reported.

### **AHF Site Picture**

In trying to better understand the site's AHF picture we learned that three small HF kilns on this site supply about 7,000 MT of their approximately 8,000 MT needs. Additional AHF is supplied by tank truck from their new site located in a complex about 10 km from this location where they have a large AHF unit supplying their 50,000 MT HCFC-22 plant as well as other fluorocarbon alternative facilities.

### **CFC-113 as Process Agent**

3F and others use CFC-113 as a PTFE processing agent (PA). A MLF project operated by the World Bank has provided funding to convert from CFC-113 in 2005 to a non-CFC P.A. Therefore 3F will only use their new CFC-113 plant output in 2005 as feed stock for CFC-113a, CFC-115 and CTFE units.

### **Plant Inspection**

While inspecting the former production equipment site for verification of removal of their TCA plant (The TCA verification report will be issued as a separate report). We took the opportunity to refamiliarize ourselves with the: a) new CFC-113 /new CFC-113a isomerization /new CTFE building; b) the structural layout of the building housing the removed TCA process, the old CTFE until and the current HCFC-141b unit, c) The current (old) CFC-113 unit, its drum filling and bulk storage facilities, and d) The CFC-115 process and receiving tank for unloading the 5 m<sup>3</sup> portable tank of CFC-113a transferred from the new CFC-113a unit.

### **Thursday, February 3 – Jiangsu Meilan Chemical Co. Ltd.**

3,000 TPA CFC-11  
3,000 TPA CFC-12  
40,000 TPA HCFC-22  
16,000 TPA AHF  
160,000 TPA Chloromethanes (CMs)

### **General**

Meilan have more than doubled their chloromethanes capacity since last year's visit. Their original CMs plant was 30,000 MT and starts with hydrochlorination of methanol to methyl chloride, followed by chlorination of the methyl chloride to methylene chloride, chloroform and carbontetrachloride. The 2<sup>nd</sup> line has a 50,000 MT capacity and the new 3<sup>rd</sup> line completed last year has a 80,000 MT capacity.

They are developing a modest temperature catalytic process to crack future excess CTC in the presence of water to HCl and CO<sub>2</sub>. The HCl will be recycled to the methyl chloride units for reaction with methanol.

### **Verification of 2004 Production Data** **CFC-11**

They produced CFC-11 four (4) months, April, June, September, and December; operating only 48 days while producing 642.56 MT vs. their 643MT quota. This year's production was reduced from 997 MT in 2003 when their quota was 1,000 MT.

Based on prior year's experience we used the CFC-11 plant distillation (shift) log sheets as the primary verification document, adding each shift's production for each month. All log sheet figures were verified to match reported monthly figures. We cross-checked transfer slips from production to the warehouse as well as checked drum filling records, which are recorded in a bound notebook; all checked to be correct. Drums are all 250 kg and there usually are no bulk shipments.

CTC is transferred via pipeline to two day tanks and then to two sets of feed tanks for use in either the CFC-11 or CFC-12 plants. A transfer slip is generated for each transfer and all were verified as accurate. A paper accounting transfer back to the CTC warehouse occurs at month-end and is reversed at the beginning of the next month. Thus the net transfer figure is the CTC consumed in the month.

AHF is transferred via pipeline to a weigh tank then to the process. A transfer slip is created for each transfer. All monthly transfers were correct.

CFC-11 domestic sales in 2004 at 952 MT were up from 532 MT in 2003. Only exported 72 MT in 2004.

### **CFC-12**

Meilan typically package all CFC-12 into returnable cylinders, no tank trucks or DAC's. However, they did fill 2 ISO tanks in 2004. Cylinder sizes in 2004 were 400, 450, 500, 1000 and 1100 kg.

All cylinder fillings are recorded in detailed log sheets, which we added up for each month and adjusted for starting and ending bulk stocks. The net figure matched annual production exactly. They fill cylinders every month, but only operated seven months, hence, monthly cylinder filling records are not used to determine monthly production. We verified individual monthly production by adding up each shifts' production from the distillation log sheets; all figures were verified as accurately reported.

They operated only 117 days in approximately two – four week campaigns over seven months producing 1236.72 MT vs. their 1240 MT quota; down from their 1068 MT quota in 2003. CFC-12 domestic sales were 1090 MT.

As discussed in the CFC-11 section CTC and AHF transfers are handled identically in both plants. All CTC and HF figures were verified as correctly reported.

Meilan continues to be one of the easiest plants to verify, as their records are very complete.

## Annex III

### Financial Verification of CFC production in China in 2004

1. From January 24<sup>th</sup> to February 7<sup>th</sup>, 2005, I joined a mission comprising Messrs. Tony Vogelsberg (team leader/technical expert) and Hua Zhangxi (HZX, technical expert) to carry out the verification of CFC production in China in 2004 in accordance with the CFC Production Sector 2004 annual programme. The mission was accompanied by the representative from State Environmental Protection Agency (SEPA). The mission visited the following plants/company/institute:

- (i) Zhejiang Juhua Fluoro-Chemical Co. Ltd. (CFC 11, CFC 12),
- (ii) Zhejiang Dongyang Chemical Plant (CFC 12),
- (iii) Zhejiang Linhai Limin Chemical Plant (CFC 13),
- (iv) Zhejiang Chemical Industry Research Institute (CFC 114, CFC 115),
- (v) Jiangsu Changshu Ref. Plant-Changshu 3F (CFC11, CFC12, CFC113 & CFC115), and
- (vi) Jiangsu Meilan Electro-Chemical Plant. (CFC 11, CFC 12).

2. Based on the experience gained from previous verifications, the mission split into a technical group and a financial group and held separate discussions with each CFC production plant/company/institute in parallel during the verification. I took the lead in financial discussions with each plant/company/institute. Therefore, this report only covers the financial verification of each CFC production plant/company/institute, which follows the Guidelines and Standard Format for Verification of ODS Production Phase-out<sup>1</sup> (Guidelines).

3. In addition to the Guidelines, the financial verification was done under the following assumptions due to the tight schedule of the mission agreed by Ms. Helen Chan, Task Team Leader, EASEN, the World Bank:

- (i) The plants/company/institute understood the importance of this verification, and
- (ii) The plants/company/institute provided completed documents and information needed for this verification.

4. Like the verification in 2004, this verification exercise was conducted ahead of the annual national audit of the CFC production sector by China National Audit Office (CNAO). The mission had no CNAO's documentation and reporting as reference to follow. Therefore, I checked necessary financial records and the original documents covering the following aspects:

- (i) Production of each CFC,
- (ii) Procurement and production of raw materials for CFC (CTC, AHF, CFC12, CFC 113a, and PCE), and
- (iii) Consumption of raw materials (CTC, AHF, CFC 113a, CFC 12, and PCE).

5. Before the verification, each plant/company/institute filled in questionnaires and submitted them to HZX through SEPA. Necessary clarifications were requested by HZX and feedbacks were given by relevant plants/company/institute.

6. The findings of my verification are summarized as follows:

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<sup>1</sup> UNDP/OzI.Pro/Excom/32/33 of October 24, 2000, adopted as Decision 32/70 at the 32nd Excom Meeting.

- **Zhejiang Juhua Fluoro-Chemical Co. Ltd. (CFC 11, CFC 12)**

7. Zhejiang Juhua Fluoro-Chemical Co. Ltd. (Juhua) was verified on January 25, 2005.

8. Juhua produced CFC 11 and CFC 12 in 2004. CFC 11 and CFC 12 are produced by the No. 3 workshop of Juhua. By the end of each month, No. 3 submitted its monthly *Raw Material Consumption Calculation Report* to the accounting office of Juhua based on its daily records. This report provided the information for CFC 11 and CFC 12 production, beginning stock of AHF and CCL<sub>4</sub>, consumption of AHF and CCL<sub>4</sub>, and closing stock of AHF and CCL<sub>4</sub>. During the verification, the data in the report were reconciled with Juhua's accounting records and the data reported to SEPA by Juhua before the verification. It is satisfactory that the accounting records reflect the production of CFC 11 and CFC 12 in Juhua. The following table shows the production of CFC 11 and CFC 12 produced by Juhua from 2000 to 2004:

	2000	2001	2002	2003	2004
CFC 11	4,338.8	4,826.3	4,489.0	3,947.5	3,325.1
CFC 12	7,758.7	7,706.3	7,157.0	7,406.0	6,232.8

9. In addition to producing CFC 12 as commodity, Juhua also produced 56.58 MT of CFC 12 for Zhejiang Linhai Limin Chemical Plant (Linhai) as feedstock for CFC 13 production. The following table presents the CFC 12 production for Linhai.

	2003	2004
CFC 12 as Feedstock of CFC 13 for Linhai	58.0	56.6

10. In 2004, CFC 11 and CFC 12 produced by Juhua were sold in domestic market, and CFC 11 was exported to Saudi Arabia, Russia, Iran, Indonesia, Malaysia, Singapore, and United Arab Emirates and CFC 12 was exported to Argentina, Papua New Guinea, Ghana, Croatia, Indonesia, Vietnam, Malaysia, Thailand, Russia, Bengal, Philippines, and Egypt. The exports of CFC 11 and CFC 12 were through a trading company and Juhua itself. All exports were licensed by the State Office for Import and Export Management of Substances Depleting the Ozone Layer in Beijing.

11. Juhua produced all CTC for its CFC production in 2004 while it produced and purchased AHF. In 2004, Juhua produced 15,986.01 MT of CTC and 80% was transferred to No.3 workshop for CFC 11 and CFC 12 production. Juhua also produced 17,146 MT of AHF and purchased 4,659.54 MT of AHF. The self-produced AHF was first used to produce CFC 11 and CFC 12. Then the rest was used to produce HCFC 22 and aqueous HF and for sales as well. The purchased AHF was fully used for HCFC 22 production. The verified accounting records for CTC and AHF consumed by CFC 11 and CFC 12 production, which are consistent with the data reported to SEPA by Juhua for verification, are shown in the following table:

Consumed by	CTC	AHF
CFC 11	4,072.83 MT	535.96 MT
CFC 12	8,745.94 MT	2,304.03 MT
Total	12,818.77 MT	2,839.99 MT

- **Zhejiang Dongyang Chemical Plant (CFC 12)**

12. Zhejiang Dongyang Chemical Plant (Dongyang) was verified on January 27, 2005.

13. Dongyang produced CFC 12 in 2004. By the end of each month, the CFC 12 production unit in Dongyang submitted its Production Acceptance Slips to the accounting office. These slips were cosigned by CFC 12 production unit and warehouse. These slips indicated the production of CFC 12 every day and became the supporting documents of accounting records. All of these Production Acceptance Slips were verified and it is satisfactory that the accounting records are consistent with the data reported to SEPA by Dongyang before the verification. The following table shows the production of CFC 12 by Dongyang since 2000.

	2000	2001	2002	2003	2004
CFC 12	2,218.3	2,218.8	1,740.7	1,442.2	1,213.1

14. The overseas markets of CFC 12 produced by Dongyang in 2004 included Bengal, United Arab Emirates, Tunisia, Mauritius, Thailand, Indonesia, Iran, and Vietnam. The exports of CFC 12 were made by Dongyang itself. All exports were licensed by the State Office for Import and Export Management of Substances Depleting the Ozone Layer in Beijing. Each shipment had its separate license.

15. During the verification, the purchased and consumption of CTC was verified. The accounting records were supported by the Raw Material Acceptance Slips for CTC purchase and by the Raw Material Consumption Slips for CTC consumption. All these slips were reconciled with the data reported to SEPA by Dongyang before the verification and the results are satisfactory. In 2004, Dongyang produced all AHF for its CFC 12 production. The Monthly Reports of Production and Material Consumption for AHF production in 2004 were verified. These reports contained the information for: beginning balance, receipt, consumption, and closing balance of AHF, which are matched with the data reported to SEPA by Dongyang before the verification. The following table gives consumption of CTC and AHF for production of CFC 12 by Dongyang.

Consumed by	CTC	AHF
CFC 12	1,701.70 MT	531.80 MT

- **Zhejiang Linhai Limin Chemical Plant (CFC 13)**

16. Zhejiang Linhai Limin Chemical Plant (Linhai) was verified on January 28, 2005.

17. Linhai produced CFC 13 in 2004. CFC 12 production facilities were dismantled in 2002. Therefore, Linhai purchased CFC 12 as feedstock for CFC 13 from Juhua. The accounting records of CFC 13 production in 2004 were supported by the Warehouse Acceptance Slips. The figures on these slips were consistent with the data reported to SEPA by Linhai before the verification. The following table shows the production of CFC 12 and CFC13 by Linhai since 2000.

	2000	2001	2002	2003	2004
CFC 12	1,364.8	1,364.9	961.6	0	0
CFC 13	27.0	27.0	27.0	21.3	20.8

18. In 2004, Limin exported 245 kg of CFC 13 and 17.6 MT of CFC 12 to Israel (recovered or recycled from returned cylinders).

19. Since the production facilities of CFC 12 were dismantled in 2002, the production quota of CFC 12 by Linhai was reallocated to Juhua by Chinese Government. Therefore, the production of CFC 12 for Linhai by Juhua is treated as feedstock of Linhai. Linhai in 2004 purchased 56.58 MT of CFC 12 as feedstock for CFC 13, which were supported by the Material Acceptance Slips. The consumption of CFC 12 for CFC 13 production was also verified and the result is satisfactory.

• **Zhejiang Chemical Industry Research Institute (CFC 114, CFC 115)**

20. Zhejiang Chemical Industry Research Institute (Zhejiang Chemical) was verified on January 29, 2005.

21. Zhejiang Chemical only produced CFC 115 in 2004. Zhejiang Chemical did not produce CFC 114 in 2004. The production of CFC 115 was reflected in the Semi-product Acceptance Slips, which were delivered to the accounting office in Zhejiang Chemical by the end of each month. The following table shows CFC 114 and CFC 115 production by Zhejiang Chemical from 2000 to 2004.

	2000	2001	2002	2003	2004
CFC 114	7.3	6.8	29.0	0	0
CFC 115	119.6	127.0	90.0	131.8	138.3

22. Only 1 MT of CFC 114 was sold to United Arab Emirates in 2004. CFC115 was blended to R502 in 2004 and 87% of R502 sales was in overseas market, which at present does not need licence from the State Office for Import and Export Management of Substances Depleting the Ozone Layer in Beijing.

23. Zhejiang Chemical in 2004 purchased 177 MT of CFC 113a from other production facilities under the same company. This transfer was proved by the Material Acceptance Slips. Zhejiang Chemical also purchased all AHF in 2004 for the production of CFC 115. The verified consumptions of CFC 113a and AHF were shown in the following table.

Consumed by	CFC 113a	AHF
CFC 115	177.0 MT	43.2 MT

• **Jiangsu Changshu Ref. Plant-Changsu 3F (CFC11, CFC12, CFC113 & CFC115)**

24. Jiangsu Changshu Ref. Plant-Changsu 3F was verified on January 30 and 31, 2005.

25. Changshu 3F produced CFC 11, CFC 12, CFC 113, and CFC 115 in 2004. The 25<sup>th</sup> day of each month, the productions workshops for CFC 11, CFC12, CFC113, and CFC 115 prepare the Monthly Production Reports based on daily records. These reports summarized the production of CFC 11, CFC 12, CFC 113, and CFC 115, and the consumption of CTC, AHF, and PCE. The data contained in these reports were reconciled with the data reported to SEPA by Changsu 3F before the verification. The results are satisfactory. The following table shows the production of CFC 11, CFC 12, CFC 113, and CFC 115 from 2000 to 2004.

CFC 11, CFC 12, CFC 113, and CFC 115 Productions by Changshu 3F from 2000 to 2004 (MT)

	2000	2001	2002	2003	2004
CFC 11	8,192.0	8,221.9	10,231.9	8,883.7	6,682.3
CFC 12	5,019.0	5,075.0	3,034.7	4,334.8	4,639.4
CFC 113	3,445.0	3,375.0	2,750.0	2,124.9	1,374.2
CFC 115	100.0	50.0	100.0	179.9	179.7

26. The production of CFC 113 only refers to the commodity.

27. In 2004, 174.6 MT of CFC 115 was blended to R502 and the total sales of R502 were 328.8 MT, of which, 71% was sold in overseas markets.

28. The overseas customers bought CFC 11, CFC 12, CFC 113, and CFC 115 from Changshu 3F in 2004 and included Saudi Arabia, Lebanon, Chile, Cyprus, Gabon, Indonesia, United Arab Emirates, Nigeria, Cambodia, Papua New Guinea, Korea, Madagascar, Dominica Republic, Philippines, Syria, Iran, Argentina, Nigeria, Albania, Pakistan, Ecuador, Vietnam, Salvador, Mauritius, Singapore, Costa Rica, Bangladesh, Greece, and Croatia, etc.

29. Changshu 3F purchased CTC, purchased and produced AHF, and imported PCE in 2004. Purchases are supported by the Material Acceptance Slips issued by the warehouse. The production of AHF was documented by the Monthly Production Reports, which included the volume of AHF production and AHF purchase. The consumptions of CTC, AHF, and PCE were reflected in the above-mentioned Monthly Production Reports prepared by CFC production workshops. The verified consumption of CTC, AHF, PCE, and CFC 113a are shown in the following table:

CTC, AHF, PCE, and CFC 113a Consumed by Changshu 3F in 2004 for ODS Production

Consumed by	CTC	AHF	PCE	CFC 113a
CFC 11	7,947.7 MT	1,026.5 MT		
CFC 12	6,098.8 MT	1,883.8 MT		
CFC 113		625.9 MT	1,391.2 MT	
CFC 115		127.1 MT		317.4 MT
Total	14,046.5 MT	3,663.3 MT	1,391.2 MT	430.4 MT

• **Jiangsu Meilan Chemical Co. Ltd (CFC 11, CFC 12)**

30. Jiangsu Meilan Chemical Co. Ltd (Meilan) was verified on February 3, 2005.

31. Meilan produced CFC 11 and CFC 12 in 2004. Production Acceptance Slips are prepared by the CFC production unit at month end. These slips were reconciled with the data reported to SEPA by Meilan before the verification and the results are satisfactory. The following table shows the production of CFC 11 and CFC 12 since 2000.

CFC 11 and CFC 12 Productions by Meilan from 2000 to 2004 (MT)

	2000	2001	2002	2003	2004
CFC 11	1,049.8	1,049.7	1,049.7	997.1	642.6
CFC 12	1,793.0	1,792.9	1,314.7	1,066.0	1,238.7

32. In 2004, only 72 MT of CFC 11 and 26.4 MT of CFC 12 were sold to Malaysia.

33. In 2004, Meilan produced all CTC for its CFC production. The total production of CTC by Meilan in 2004 was 3,450.5 MT. Meilan also produced 7,848.6 MT of AHF and purchased 6,710.4 MT of AHF in 2004. The Material Acceptance Slips issued by CFC production unit reflected the consumption of CTC and AHF. The following table gives the consumption of CTC and AHF in 2004.

CTC and AHF Consumed by Meilan in 2004

Consumed by	CTC	AHF
CFC 11	808.8 MT	114.2 MT
CFC 12	1,686.0 MT	505.2 MT
Total	2,494.8 MT	619.4 MT

Wu Ning  
Financial Analyst  
Verification Team of CFC Production in China in 2004  
February 7, 2004



**CHINA**

**REQUEST FOR RELEASE OF 2005 FUNDING TRANCHE  
AND  
AMENDED 2005 ANNUAL IMPLEMENTATION PROGRAMME**

**Prepared and Submitted By:**

**STATE ENVIRONMENTAL PROTECTION ADMINISTRATION (SEPA), CHINA**

**and**

**UNDP**

7 February 2005

MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE  
MONTREAL PROTOCOL ON SUBSTANCES THAT DEplete THE OZONE LAYER

PROJECT COVER SHEET - MULTI-YEAR PROJECTS

COUNTRY CHINA

PROJECT TITLE

Solvent Sector Plan for ODS Phase out in China

BILATERAL/IMPLEMENTING AGENCY

UNDP

SUB-PROJECT TITLE (S)

NATIONAL COORDINATING AGENCY

State Environmental Protection Administration (SEPA)

LATEST REPORTED CONSUMPTION DATA FOR ODS ADDRESSED IN THE PROJECT

A. Article-7 Data (ODP Tonnes, 2002 as of)

Annex-A Group-I Substances (CFCs) ODP Tonnes	30,995.60	Annex-B Group-III Substances (TCA) ODP Tonnes	380.64
Annex-B Group-II Substances (CTC) ODP Tonnes	80,225.07	Annex-E Group-I Substances (MeBr) ODP Tonnes	1,087.80

B. Country Programme Sectoral Data (ODP Tonnes for 200, as of 200)

Substance	Aerosols	Foams	Refrigeration	Substance	Solvents	Process Agent	Fumigant
CFC-11				CTC			
CFC-12				TCA			
CFC-115				MeBr			

CFC CONSUMPTION REMAINING ELIGIBLE FOR FUNDING (ODP Tonnes)

2,349.80 ODP Tonnes

CURRENT YEAR BUSINESS PLAN: Funding level US\$ million, Total Phase-out ODP Tonnes

PROJECT DATA		2004	2005	2006	2007	2008	2009	2010	Total
CFC-113 (ODP tonnes)	Annual Consumption Limit	1,100	550	0	0	0	0	0	N/A
	Annual Phase-out	550	550						1,100
TCA (ODP tonnes)	Annual Consumption Limit	502	424	339	254	169	85	0	N/A
	Annual Phase-out	78	85	85	85	84	85	0	502
CTC (ODP tonnes)	Annual Consumption Limit	0	0	0	0	0	0	0	N/A
	Annual Phase-out	0	0	0	0	0	0	0	0
<b>TOTAL ODS CONSUMPTION TO BE PHASED OUT</b>									
Annual CFC phase-out target in the Solvent Sector (ODP tonnes)		628	635	85	85	84	85	0	1,602
Total Annual Funding Instalments (US\$)		5,555,000	5,680,000	5,055,000	5,480,000	1,480,000	1,480,000	1,480,000	26,210,000
Total Support Costs (US\$)		416,625	426,000	379,125	411,000	111,000	111,000	111,000	1,965,750
Total Costs to Multilateral Fund		5,971,625	6,106,000	5,434,125	5,891,000	1,591,000	1,591,000	1,591,000	28,175,750

FUNDING REQUEST

Release of approved funding for the sixth tranche (2005) of US\$ 5,680,000 plus support costs of US\$ 426,000 as indicated above.

Prepared by: UNDP in consultation with SEPA

Date: 7 February 2005

**A. BACKGROUND**

1. Funding in the amount of \$52 million for the Solvent Sector for ODS Phase-out in China was approved at the 30<sup>th</sup> Executive Committee Meeting in March 2000, to phase out the consumption of trichlorotrifluoroethane (CFC-113) and 1,1,1 trichloroethane (TCA), as well as the consumption of carbon tetrachloride (CTC) used as cleaning solvents in China, by 1 January 2006, 1 January 2010 and 1 January 2004 respectively.

2. Since implementation was initiated in 2000, China has met its 2000, 2001 and 2002 CFC-113, TCA and CTC solvent consumption control limits through the completion of on-going individual investment projects and ODS Reduction Contracts implemented under the 2000 – 2001 Annual Implementation Programme.

3. Under the Sector Plan, funding tranches for 2000 – 2004 in the total amount of \$31,345,000 has been approved and released by the Executive Committee at its 30<sup>th</sup>, 33<sup>rd</sup>, 36<sup>th</sup>, 40<sup>th</sup> and 42<sup>nd</sup> Meetings. The annual phase-out targets and the funding tranches for the Sector Plan are reflected in Table 1 and Table 2 below.

**Table 1 Consumption Control Targets for ODS Solvents (tonnes ODP)**

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
CFC-113	3300	2700	2200	1700	1100	550	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1,2</sup>
TCA	621	613	605	580	502	424	339	254	169	85	0 <sup>3</sup>
CTC	110	110	110	55	0 <sup>1</sup>	0 <sup>1,2</sup>					
Total	4031	3423	2915	2335	1602	974	339	254	169	85	0

**Table 2 Annual Programme Actual Amounts (US\$ 1,000s)**

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
CFC 113	4800	4800	4050	3600	3600	3600	3300	4000	0	0	0	31750
TCA	1450	1455	1455	1455	1455	1455	1455	1455	1455	1455	1455	16000
CTC	0	0	325	200	200	325	0	0	0	0	0	1050
TA	500	700	500	500	300	300	300	25	25	25	25	3200
Total	6750	6955	6330	5755	5555	5680	5055	5480	1480	1480	1480	52000

**B. 2005 Funding Tranche**

4. At its 44<sup>th</sup> Meeting, the Executive Committee, by its Decision 44/31, decided “(b) to approve the annual implementation programme for 2005, funding for which would be requested at the 45<sup>th</sup> Meeting.” The Executive Committee is therefore requested to release the 2005 funding level

of \$5,680,000 and the corresponding support fees of \$426,000 at its current 45<sup>th</sup> Executive Committee Meeting.

**C. Amended 2005 Annual Implementation Plan**

5. At its 32<sup>nd</sup> Meeting, the Executive Committee took note of a request by China to re-allocate \$2 million savings from ODS Reduction Contracts for the local production of n-propyl bromide, as China considered locally produced n-propyl bromide to be the only viable solution to enable the phase-out targets to be achieved, that the production and use would be subject to any overriding consideration on health and safety and to any relevant decisions of the Parties on n-propyl bromide.

6. At its 33<sup>rd</sup> Meeting, the Executive Committee, by its Decision 33/46, decided to approve the re-allocation of the \$2 million funding for local production of n-propyl bromide, with the following understandings:

- (a) N-propyl bromide produced by China would not be made available for export;
- (b) An annual production quota would be imposed on n-propyl bromide to meet the requirement for solvent use only;
- (c) China would control the sale of n-propyl bromide only to enterprises involved in the conversion projects under the China solvent sector plan;
- (d) The Import and Export Office of China would monitor and ensure that no n-propyl bromide was exported by China;
- (e) The implementing agency of the China solvent sector plan, UNDP, would include in its annual audit plan verification that no n-propyl bromide was exported;
- (f) No further financial assistance would be sought from the Multilateral Fund for the final conversion to zero ODP alternatives.

7. In view of the condition of general restriction for China to export of n-propyl bromide produced in its normal commercial trade, not only on n-propyl bromide that would be produced with Multilateral Fund, China decided to return the \$2 million re-allocated for the local production of n-propyl bromide to use as original approved in the Solvent Sector Plan.

8. Based on cleaning test and market analysis conducted in China so far, there are several non-ODS solvents produced locally that could be used to replace CFC-113 and TCA in industrial production as alternative solvent, such as HEP-2 (with n-propyl bromide as main components) and HT-1 (including hydrate-carbon), but the supply of these alternative solvents is still at low quantity and higher price. It is therefore important to support the development and local production of these alternative solvents so as to have sufficient supply at lower price to reduce the cost of phase out actions and make the implementation of Solvent Sector Plan more successfully and smoothly.

9. In the implementation of phase-out activities in the solvent sector since March 2000, many of the electronic enterprises had selected HEP-2 as its alternative replacement. HEP-2 has proven to be an excellent cleaning solvent for the electronic industries. According to the phase-out schedule, CFC-113 will be completely phased out by end of 2005, however, there are still large

number of enterprises who use TCA as its cleaning solvent. Together with the enterprises that had previously selected HEP-2 as its alternative replacement, there is a market demand for the annual consumption of about 10,000 tons of HEP-2, excluding demands from the aviation and automobile industries, and precise parts production.

10. HEP-2 is a kind of solution with low ODP and is mainly used in process of cleaning of metal parts in electronics, i.e. kinescope, vacuum switch and electrical machinery. It can also be used in cleaning the PCB as a whole plate, semi-conductors and LCD. : However, since it is corrosive to PVC materials it cannot be used in parts with PVC materials.

11. HEP-2 is a solvent with n-propyl bromide as main composition. Its cleaning function is as good as TCA and TCE and can clean perfectly the parts in aviation industry, auto industry and precise parts manufacture. It's main characteristics include:

- excellent cleaning function: Its cleaning function is as good as TCA for good wetting and suits cleaning the concave area of fine slot in permeant cleaning style;
- Simple to use as alternative: Cleaning machines used for TCA as solvent can be used with HEP-2 as its boiling point and specific gravity are the same as TCA;
- Fast evaporation and drying : Since HEP-2's boiling point is only 71 degree C, it can be dried quickly;
- Non-combustible: HEP-2 has no combustibile point, it is not classified as dangerous goods;
- High safety: HEP-2 has no bad affection on most metals, because it can be decomposed by heating or by adding water;
- Low toxicity: The operation condition of exposure limit is under 25ppm;
- Low ODP: The existing time in atmosphere is 11 days.

12. To meet the demand as replacement for TCA, China would like to request the Executive Committee's approval of the re-allocation of the \$2 million savings previously achieved through the execution of the ODS Reduction Contracts, for the purification of locally produced n-propyl bromide to produce HEP-2. Such purification line for producing HEP-2 with an annual capacity of 4,000 tons will be installed at the Multilateral Environment Convention Performance Industrial Zone of SEPA, in Langfang area of Hebei Province of China, just outside of Beijing.

13. The process will be to purify the existing locally produced n-propyl bromide. The purification process will involve the contact of the vapour and the liquid phase in the purification tower, during which part gasification and part condensation will occur and re-occur, making the mixed liquid form a pure composition by separating, resulting in the production of higher purity (99.8%) n-propyl bromide.

14. The proposal will utilize the \$2 million saving for the following purposes:

- |                                                       |             |
|-------------------------------------------------------|-------------|
| a) Procurement of equipment for purification process: | \$1,440,000 |
| b) Design, Engineering etc.                           | \$ 560,000  |

15. In accordance with established national regulations, and following the UNDP's procurement practices, the selection of the most qualified contract will be conducted through a limited national competitive bidding process.

16. In addition, \$720,000 will be contributed by the winning contract as counterpart funding for auxiliary equipment and other construction fees.

17. The 2005 Annual Implementation Programme, approved at the 44<sup>th</sup> Executive Committee Meeting is hereby amended to include the \$2 million savings achieved through the previous ODS Reduction Contracts.

## SOLVENT SECTOR PLAN FOR ODS PHASE-OUT IN CHINA 2005 ANNUAL IMPLEMENTATION PROGRAMME

### 1. Data

Country	China
Year of plan	2005
Number of years completed	5
Number of years remaining under the plan	5
Target ODS consumption in Sector for 2004 (ODP tonnes)	CFC-113: 1,100 TCA: 502
Target ODS consumption in Sector for 2005 (ODP tonnes)	CFC-113: 550 TCA: 424
Level of funding requested (US\$)*	5,680,000
Lead implementing agency	UNDP
Co-operating agency (ies)	N/A

### 2. Targets

<b>Target:</b>	CFC-113: 550 ODP tonnes TCA: 85 ODP tonnes			
<b>Indicators</b>				
		<b>Preceding Year</b>	<b>Year of Plan</b>	<b>Reduction</b>
Supply of ODS (ODP MT)	Import			0
	Production	0	0	0
	<b>Total (1)</b>	<b>1,602</b>	<b>974</b>	<b>628</b>
Demand of ODS (ODP MT)	Manufacturing	1,602	974	628
	Servicing	N/A	N/A	N/A
	Stock piling	N/A	N/A	N/A
	<b>Total (2)</b>	<b>1,602</b>	<b>974</b>	<b>628</b>

### 3. Industry Action

<b>Sector</b>	<b>Consumption Preceding Year (1)</b>	<b>Consumption Year of Plan (2)</b>	<b>Reduction within Year of Plan (1) - (2)</b>	<b>No. of Projects Complete</b>	<b>Number of Servicing Related Activities</b>	<b>ODS Phase-Out (ODP MT)</b>
CFC-113	1,100	550	550			550
TCA	502	424	78			78
CTC	0	0	0			0
<b>Total</b>	<b>1,602</b>	<b>974</b>	<b>628</b>			<b>628</b>

It is envisaged that the phase-out of CFC-113 and TCA will be achieved through the completion of enterprise-level activities initiated in 2003 and 2004, as a result of ODS Reduction Contracts, Voucher System, Retroactive Reimbursement Mechanism and Agreement on self phase-out that will contribute and most probably will exceed the 628 ODP tonnes phase-out targets required in 2005.

## 3.1 Activities and Achievement of Phase-out Targets in 2005

Activities	Quantity of Phase-out			
	CFC-113 (ODP tonnes)	TCA (ODP tonnes)	CTC (ODP tonnes)	No. of Enterprises
Completion of 2002 ODS Reduction Contracts - Commissioning and destruction of baseline equipment at 2 remaining enterprises by May 2005	133.8	9.4	-	2
Completion of 2003 ODS Reduction Contracts (12), Voucher System (71 SMEs), Self Gradual Phase-out (143) and Reimbursement Mechanism - complete equipment procurement, delivery, installation, commissioning and destruction of baseline equipment at 12 enterprises under 2003 ODS Reduction Contract; - Phase-out activities completed at 71 SMEs under the Voucher System; - Verify agreed solvent reduction at 143 enterprises that signed agreement for gradual phase-out; - Identify enterprises that completed phase-out activities at its own costs, verify eligibility and quantity of phase-out and process retroactive reimbursement	333.2	-	-	226
Continue implementation of 2004 phase-out activities: 31 ODS Reduction Contracts, 167 enterprises under Voucher System and 18 under Retroactive Reimbursement Mechanism: - complete equipment procurement, delivery, installation, commissioning and destruction of baseline equipment; - Phase-out activities completed under the Voucher System; - Verify agreed solvent reduction at 167 enterprises that signed agreement for gradual phase-out; - Verify eligibility and quantity of phase-out and process retroactive reimbursement	767.3	119.7	-	216
Initiate 2005 phase-out activities - Identify TCA consumers and all remaining CFC-113 consumers to participate in phase-out activities, through Voucher System, Retroactive Reimbursement mechanism; - Continue to identify enterprises for gradual self phase-out and finalize agreement	*	*		
<b>Total Phase-out to be achieved in 2005</b>	<b>1,234.3</b>	<b>214.1</b>	<b>-</b>	
<b>Phase-out targets in 2005</b>	<b>550</b>	<b>85</b>	<b>0</b>	

\* 2005 phase out activities to achieve 550 ODP tonnes of CFC-113 and 85 ODP tonnes of TCA in 2006.

#### 4. Technical Assistance

Activity	Description	
Establishment of a National Training Center on ODS phase-out and non-ODS cleaning applications in the solvent sector	Objective	Training on non-ODS cleaning applications and solvents
	Target group	Entreprise technical personnel, national experts, professionnel
	Impact	Improved knowledge on available non-ODS cleaning applications
Public Awareness	Objective	Introduce and publicize country-wide ODS phase-out in solvent sector to attract attention and participation
	Target Group	Small solvent consumers in both formal and informal enterprises
	Impact	Increase awareness and interest in participation
Support usage of Alternative Solvents	Objective	To ensure result of phase-out activities and avoid the enterprise to revert to ODS use after completion
	Target Group	Enterprises converted to non-ODS cleaning and enterprises with potential to participate in phase-out activities
	Impact	Sustained non-ODS conversion
Study on Essential Use	Objective	To address demand of alternative substitute after 2010
	Target Group	Research institutions and enterprises requiring essential use of certain OD solvents
	Impact	Smooth management of essential ODS usage
Programme against illegal import, illegal production and illegal consumption of ODS	Objective	To ensure effective monitoring and enforcement on ODS usage
	Target Group	Local EPB, customs authorities
	Impact	Effective mechanism to tackle illegal ODS production and usage
Study on substitute technology for medical equipment cleaning application	Objective	To acquire technology on non-ODS cleaning application in the sector
	Target Group	Institutions and experts and enterprises in the sub-sector
	Impact	Facilitate the smooth and successful conversion to non-ODS cleaning
Study on alternatives development and research for PCB cleaning applications	Objective	To address the demand for substitute for PCB cleaning
	Target Group	Electronic enterprises to convert to non-ODS cleaning
	Impact	Sustained non-ODS conversion

#### 5. Government Action

Policy/Activity Planned	Schedule of Implementation
Notice on TCA Sales Certification	Formulation and issuance early 2005
Public Awareness	Throughout the year
Others	See below

The following additional activities will be continued and efforts will be increased in 2005:

- a) Continuing identification and monitoring of enterprises who undertook phase-out at their own initiatives, verify phase-out and implement reimbursement of phase-out costs.
- b) Continuing identification of enterprises who decide to undertake gradual phase-out, finalize agreement, verify annual phase-out and monitor issuance of Usage Certification.

## 6. Annual Budget

Activity	Planned Expenditures (US \$)
Enterprise-level phase-out activities - Voucher System, Retroactive Reimbursement and Gradual Self Phase-out mechanism	4,280,000
Technical Assistance - National Training Center (\$500,000) - Public Awareness (\$100,000) - Support usage of alternative solvents (\$100,000) - Study on essential use (\$20,000) - Programme against illegal production, illegal import and illegal consumption of ODS (\$350,000) - Standards and Technical Specifications (\$100,000) - Study on alternatives for PCB (\$100,000) - Training and Audit on performance audit (\$30,000) - International and national technical experts (\$100,000)	1,400,000
<b>TOTAL</b>	<b>5,680,000</b>
Purification of n-propyl bromide for use as main component for production of alternative solvent HEP-2 - Selection of contractor through national competitive bidding - Design, engineering - Procurement of purification equipment - Site Construction - Trial production - Production of annual capacity of 4,000 tons	<b>2,000,000</b> (from savings of previously approved tranches, achieved as a result of the ODS Reduction Contracts)

## 7. Administrative Fees

The administrative fees of \$426,000 will be utilized by UNDP throughout the implementation of this tranche to ensure effective monitoring and implementation of project activities and provision of policy guidance.